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future days are back

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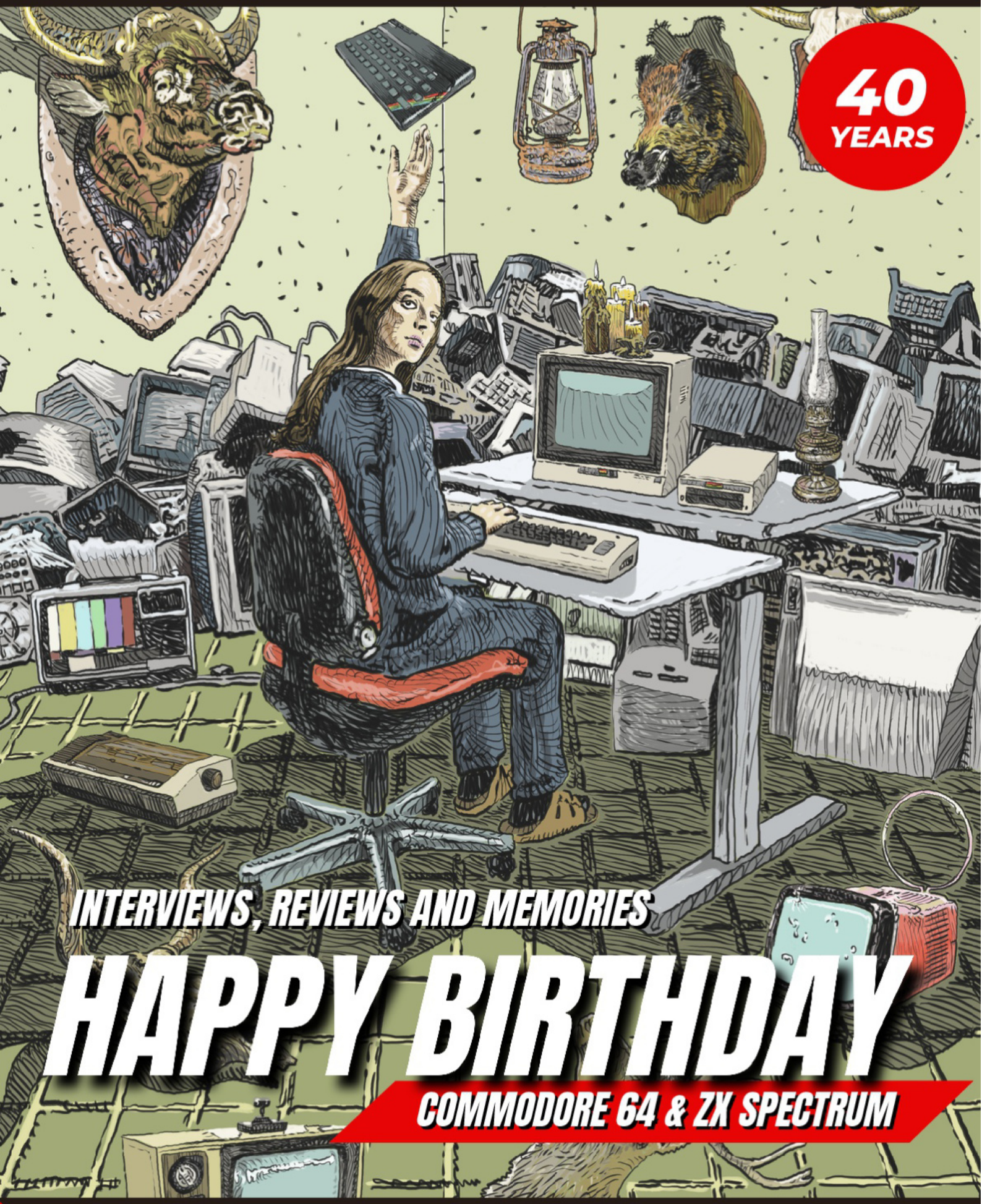

40 YEARS

INTERVIEWS, REVIEWS AND MEMORIES

HAPPY BIRTHDAY

COMMODORE 64 & ZX SPECTRUM

Life begins again at 40!

The other night I had a dream. I was in my bedroom and I was loading a game from the Hit Parade newsstand compilation, when, all of a sudden, I felt a presence next to me. There and then I didn't pay much attention to it, the raster bars continued to change color abruptly and the desire to see the game had the upper hand over me. The game finally loads up, I stop the recorder, annotate the number of laps to quickly load the game next time and finally I notice this presence. It's a middle-aged gentleman, with a thin beard, partly white, and hair tousled with gel. A good half of it white, too.
Strangely, I don't sense any fear. The expression on his face is relaxed, he even seems satisfied that the game is running. I try to speak, but I find that no sound comes out of my mouth. I want to ask him who he is, but I can't get a word in edgewise. But something happens in that moment, in my mind echoes the answer to my question. As if the stranger had read my thoughts and communicated telepathically with me.
He says his name is Francesco, like me, and like me he is a computer enthusiast. He loves to play with the Commodore 64 and, like me, he loves to write more and more complex programs. He says he is 40 years older than me and every minute that passes, he seems more and more familiar to me. One thing strikes me about his thinking, he tells me to always follow my passions, to care not about the judgement of others. Do what you like, don't stop being curious and you'll always be fine. Then the dream stops and I go back to sleep, in a deep sleep devoid of any other dream activity.

The parallelism between the teenager and the adult is so obvious that it raises the question: how is it that even though so much time has passed we still feel the same emotions?
We will try to answer this question later. In the meantime we want to ask you another one: how many of you would have ever bet that, after forty years from their birth, we would still be talking about 8-bit machines, not as vintage objects, but as a movement in complete activity with a lot of software houses ready to develop, advertise and sell games of fine workmanship? Who would have ever thought that in front of such incredibly powerful machines, these oldies could still be so alive, churning out new games every month. Yet that's what's been happening for the past few months.

This special issue is our way to wish Happy Birthday to the Commodore 64 and the ZX Spectrum...
It really is true that life begins again at 40!

Before closing I want to say that yes, we also know about many other home computers, and they're all equally interesting, and they have reached or will reach soon this goal. Our choice fell on the Commodore 64 and the ZX Spectrum because in Italy and in Europe they represented the most important dualism and we thought it was nice to dedicate them a special issue.
Probably more will follow if you help us out!

Francesco Fiorentini

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The C64: 40 years and counting...

by Mic the Biker Novarina

In June 2022, the Commodore 64 turns 40 years old. The best-selling computer of all crosses this prestigious milestone, and it does so not as a faded memory, but as a 16-color rainbow that never ceases to amaze us.

It was January 1982 when, at the International Consumer Electronics Show, this new Home Computer was announced and a prototype was shown. Few months later, precisely in June, it was officially presented to the whole world in Chicago, even if the legend says that the real preview was in Japan few days before. In that period nobody would have never imagined what would have become that nice computer from the "biscuit" color.

In August 1982 the sale started in the States, at the price of 595 dollars. To keep costs down, initially they kept the body of the Vic20, but shortly after they changed only the color. In September it was shown at the SMAU in Milan, strictly under display case, and put on sale in March 1983 at the initial figure of 973,500 Lire, a price destined to drop soon after making the sales of the computer literally explode. We talked about the aggressive price of the machine in question, but for me the real ace in the hole was to make it available almost everywhere. The Commodore 64 freed itself from the typical concept of "Home Computer" purchasable only in specialized shops. The Marketing managers had the intuition to sell it also in the department stores, in the toy shops and in the many audio-video stores present on the territory in those years. Moral of the story, this wonderful machine became a legend: Wikipedia reports the words "The Commodore 64 is the most sold computer in the world, a record certified by the Guinness Book of Records". The numbers are staggering, wrapped in a sort of mystical halo typical of the oral tales of the past: it is estimated that between 12.5 and 30 million units have been sold worldwide. Legends, even if they wouldn't need to, push people to want to increase, almost to make their value even greater. Based on known serial numbers, the minimum number of units manufactured would be 15.79 million, or more likely 19.27 million. Here, too, the data adds to the aura, because there is talk of a "minimum number", nothing

Fig. 1 - The Commodore 64 "breadbin"

and no one disproves the figure of 30 million units sold over a period of eleven years. But we like it that way, since many of us have contributed to writing this record.

That foxy Jack Tramiel

Good Jack Tramiel was an old fox. It was he who, while the project was underway, changed the intended use from console to personal computer. He wanted to create a machine with as much as 64kb of ram, which was twice as much as most computers at the time. Tramiel knew that DRAM prices were plummeting and that affordable mass production would soon be possible. Not to mention that the entire project was born following the concept of vertical integration, that is, the supply chain of a company is integrated and owned by that company. Translated in a nutshell, a retail price of $595 corresponded to a production cost of only $135.

As almost everybody knows the heart of the cookie is the MOS Technology 6510, with 64 kB of DRAM and 20 kB of ROM with KERNAL and BASIC interpreter in version 2.0. Graphics and sound had two dedicated chips, in order to lighten the work of the main cpu: video was managed by MOS VIC-II and audio by MOS SID.

To design the VIC-II they started with a market survey on computers and video games, to discover the most requested features. From here was born the brilliant idea to add the management of sprites. These are nothing more than an image in raster graphics, which can be moved independently of the background. Most of the VIC-

Fig. 2 - Emlyn Hughes International Soccer on C64

II was used to manage them: it could manage 8 of them, each 24×21 pixels, or 12×21 in multicolor. With programming, the hardware limitations could be circumvented. You could, in fact, generate more than 8 sprites simultaneously: this technique was known as sprite multiplexing. By resorting to flicker, that is to say the alternating switching on of one or more sprites, it was possible to get around the hardware limit of 8 horizontal sprites, and 40 years ago this was really something.

The SID, for its part, is an unparalleled legend. Its creator, Robert Yannes, said: "I thought the sound chips on the market, including those in Atari computers, were primitive and obviously designed by people who knew nothing about music". The main features of this sound chip we all know: three independent voices on eight octaves, four waveforms, several filter modes. On each channel you can manage attack/decay/sustain/release, the control ports are digital, while the output ports are analogue. Due to the imperfect production technology of the time, the output of the 6581 was always slightly distorted. Every time the volume control was changed, an audible click was produced. By quickly adjusting the main volume register to 4 bits, this could be modulated as PCM, resulting in a "virtual" fourth channel, good for playback of 4-bit digital samples. Here a flaw becomes the peculiarity of this chip, allowing digitized speech and typical drum machine sounds. The better technology of the following 8580 chip, mounted since 1987 and having a voltage of 9 volts instead of 12, caused the almost total disappearance of distortion.

A growing cultural movement

A lot of water has passed under the bridge in 40 years, but the Commodore 64 doesn't seem to want to stop. From home computer and game machine it has become a real cultural phenomenon. Just to make an example, the games' music has created a movement of its own among the C64 users and not only. Chip music is increasingly being composed, as well as played and remixed. Chip music festivals have sprung up over the years and this is largely due to those who tried their hand at making music with the SID. We can't thank people like Rob Hubbard, Jeroen Tel, Tim Follin, David Whittaker, Chris Hülsbeck, the late Ben Daglish, Martin Galway, Kjell Nordbø and David Dunn enough.

I could go on for another year writing details about this stratospheric computer, but after 40 years there is more to tell. There are the emotions, memories and anecdotes we carry inside. There are periods of life that made us who we are, friendships that are still solid thanks to the Commodore 64. Now it's time to let people talk.

GEO

For us it was a way of being that today is confirmed by history. A network of people curious to push the limits of the machine without yet knowing what they were. Always ready to help each other and share everything just for the pleasure of it. To know what it was all we need to do is look at the eyes of a person who lived, in those years, the evolution of this glorious machine. You can see it while flipping through a magazine of the time, looking at the advertisements, sometimes in black and white, and the images of the screens of the programs reviewed. A cloud of dreams and projects that today time has rewarded, and that is still "Alive and kicking", paraphrasing a well-known song of those years.

Fig. 3 - The Commodore 64C

JAWS

What memories of the C64, it's been 40 years already. It was the age of patience. Waiting for a game to load, with the datasette. Making sure it didn't crash, making sure everything worked! Hoping. And then the game video would start with spectacular music, for me Batman. So many childhood evenings spent playing it. Total Recall, Back to the Future, Ghostbuster, Batman, Turrican... Just to name a few. In those years a world was being created that still lives on today. All my passion for video games was born thanks to the Commodore 64, which I still own and look at with the eyes of a patient child.

DAVID DEVIL

The Commodore 64 is a wonderful machine. In 40 years it has been able to give great satisfaction to millions of fans all over the world. Many people grew up with the idea that the CBM 64 was a game console, and many people bought and used it just for that purpose. This was thanks to the many games that followed over time. But the Commodore 64 went much further: the most disparate software was in fact available for this legendary machine. From programming languages to word processing; from graphics, spreadsheets, voice synthesis and music composition. And then printing posters and billboards with dedicated software (e.g. print master), BBS browsing: everything was possible with the 6502 and 64kb of Ram. But the fun began when, the luckiest ones, could extend the hardware compartment. The owners of the REU (RAM Expansion Unit), which cost as much as the Commodore itself, had at their disposal an infinite amount of memory to indulge themselves with things that, at the time, seemed to come directly from Alpha Centauri. Going to the newsstands and buying cassettes with pirated games to play with friends was very cool. With 5000 lire you could take home a dozen games and, if you had a 5¼" floppy disk drive, you could have software and games galore. How can we forget the sumptuous GEOS that, in just one floppy, (2 for the 2.0 version) allowed to have at hand a complete windows operating environment with everything you needed? Great for traditional office functions in addition to the great speed-dos function. I loved and still love the Commodore 64. A machine alive more than ever, and thankfully not just in my memories. Just take a look at the demoscene or on the CSDB website to realize how

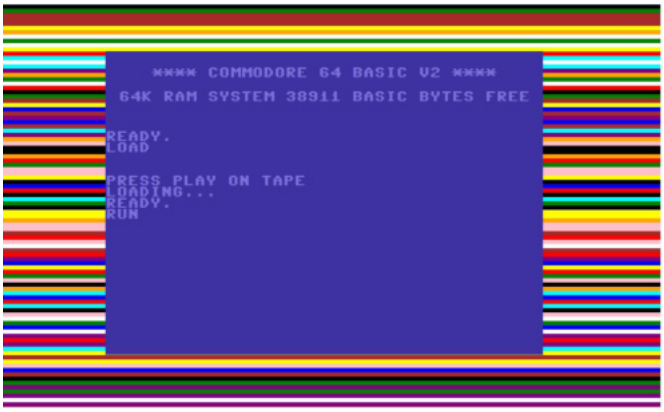


Fig. 4 - Screenshot of C64 Loading Screen Simulator

legendary, and current at the same time, the Commodore 64 is.

LUCA ANTONIAZZI

Once, many years ago, I dreamed that, struck by the graphics of Defender of the Crown on an Amiga on display in a shop, I sold my C64 to get the Amiga 500. But then, when I loaded Grand Prix Curcuit and the intro music started, I felt sick. I threw up several times in spurts and exclaimed, "Madonnaddio, what is this gay shit? Oh God what the fuck did I do? What the fuck did I buy? Oh, my God! Oh my God!" Then I woke up with a start, sweating like a pig at the equator, and I ran to see how things were. Luckily my trusty Commodore 64 was plugged into the TV, while the Amiga 500 I think was still in the box.
So I loaded up Grand Prix Curcuit on the Commie hooked up to the 80's stereone at full volume, the music was beautiful and I was happy again.

RITA (My Cousin)

Who knows why my dad was won over by a technology unknown to him. It was my destiny: I wouldn't have studied computer science otherwise! But did you know that my parents had confiscated it because I played too much? One night they found me climbing the wall because I wanted to be like Miner! I have two beautiful memories related to the Commodore 64. The first one: do you remember when you (Me, aka Mic the Biker), all proud, showed me at Christmas a little program written by you in which many asterisks appeared as if to simulate snow? And maybe, if I remember correctly, the words Merry Christmas? Proud as if we had launched the shuttle! Second: I remember very well that for the eighth grade exam, I had written a software with a language called

Logo and I had simulated the breaking of a body under stress! Science test! And I remember that asshole prof had lost my tape before the exam. But I, being a good IT guy, already had the backup copy at home!!! I'm still anxious about that moment.

CARLO NITHAIAH DEL MAR PIRAZZINI

It was a dream! And it would come true a little later. I'd seen it at a friend's house. It was a real computer. It arrived at home thanks to my father in 1987, a present given to me for my promotion to the sixth grade. It was an incredible joy to unpack it, plug it into the TV and start to understand how it worked.

The memory of that June 1987 was unbelievable and every time I look at my old C64 I remember my father, who shortly after got sick and left us. The Commodore was a part of him and it brought back happy moments in my mind. Hours and hours trying to figure out how to get ahead in some levels, endless minutes waiting for the game to load on the "recorder". In the summer in the basement getting cool and staying up late in front of interminable games, very difficult and impossible to decipher. Some titles were tied to a moment. For example, Paradroid was the moment linked to the return of my younger brother from the afternoon at school. It was his favorite game and we were fascinated by Andrew Braybrook's game mechanics. Then, fascinated by Super Mario, we would solace ourselves with the terrible Giana sisters. A very valid alternative with a resounding soundtrack. But our favourite was Bubble Bobble. It was given to us as an original cassette just shortly before our father died. My brother and I spent hours in front of the title. It was a solid connection to the one who, through love, had raised us and who was no longer there. But really he was there, among the dragons, bubbles, wacky monsters and a thousand colorful bonuses.

The Commodore 64 is so alive in my heart, these 40 years together have been wonderful, and I look forward to 40 more of the same. It has been a gift, a bond, a piece of family.

ANCIENT

Happy Birthday Cookie! 40 years of Commodore 64. What can we say about the world's most famous computer? What can I say? This is the object that has accompanied me in my life for the longest time. But it's not a mere and simple object, it has its own soul: it accompanied me in sad moments, in happy moments, in moments of learning. It has added to the education given by my parents a second education. An education in computing, an education in work, an education in respect for things. It formed me as a collector, formed me as an enthusiast. No object has accompanied me for so long. I am forty-three years old and he has accompanied me for at least thirty-eight. To this day functioning, to this day always ready for the work required of him. A formidable playground and software park, which was a dream at the time and which no platform could equal. Maybe today, with the massification of PCs in every home, we can surely find a higher amount of software, but for that time it was simply legend. Community and community of fans and programmers still developing software for this wonderful machine. Nostalgia projects, in which this wonderful computer is emulated in order to feel again the emotions of the past, even if beyond the simple visual feeling, we are far away from living the same emotions that that blue screen with the writing Ready arouses in me. More than just a computer: an idol that simply marked the most beautiful and most iconic era ever, which will never be repeated. An era marked by scientific and technological innovations, an era marked by cult movies that we can relive in the form of video games on our Commodore. An era marked by a computer, a true friend that has accompanied us and will continue to accompany us for many years. Happy birthday fido Biscottone! Welcome to your first 40 years!

FRANCESCO FIORENTINI

When Mic asked us to participate to this article, providing an anecdote or a personal memory related to the Commodore 64, I didn't hesitate for a second to say yes. The memories related to this machine, which accompanied part of my childhood, are many. However, when I started writing, I thought I could have done something different: instead of telling something happened when I was young, or related to the ludic experience of the breadbin, I could have told something completely different. We all know how important the Commodore 64 has been as a gaming machine, how many masterpieces have been developed and how much game production is still going on nowadays. But we're talking about a Home Computer to all intents and purposes, a machine that wasn't born just for fun. A

Fig. 5 - Setup of a Commodore 64C

machine that could be used also for didactic and 'home office' purposes. And indeed, there are thousands of programs not for fun. Some time ago an emblematic sentence circulated: "Think of something: for the Commodore 64 it was done!".

But the Commodore 64 was not only this: for many of us it was also the computer that opened the way to programming. Like other 8 bits of the '80s, the home computer has been the springboard towards a profession, and therefore a career, that for many of us still continues. And this is the thing that fascinates me about the Commodore 64: the incredible amount of languages and Basic extensions available. Some time ago I came across this list, Commodore Languages List: https://telarity.com/~dan/cbm/languages.html that, even if extended, doesn't seem to be exhaustive yet. If you have a look at the number of languages reviewed for the C64, 174, you will immediately realize what I mean. OK, I will be answered that many of them are just Basic extensions, due to the fact that the standard Basic of the C64 is really lacking. But at the same time there is no doubt that they exist and that it is still possible to use them today to write code.

So have fun with your Commodore 64, real or emulated, and play all the games you want, old or new it doesn't matter. But if you have time, try also to write some code, the possibilities are not lacking for sure. Oh, and the satisfaction of seeing a simple program compiled in C or Cobol, and then see it running on the C64, is indescribable!

Biker's Thoughts

I became acquainted with the Commodore 64 at Christmas 1986, when my uncle bought a brand new one and invited us to see that technological marvel. Until that day I had been using a Vic20 at school, but seeing the big cookie in action was like entering a tunnel and going on a time travel. Days went by and I dreamed about that amazing computer, going from one local store window to the next. One October afternoon in 1987 my dad took me for a ride to Abba computer "Just for the hell of it". It was a lie: while I was lost among the monitors he had ordered one. That year Santa Claus brought me the Commodore 64, a datasette and a fantastic transparent Joystick Competition Pro.

One Saturday morning in January I went with my mom to the market in Via di Nanni and we stopped at the usual newsstand in Corso Peschiera. While we were waiting in line to buy Tv, Sorrisi e Canzoni I was totally enraptured by a magazine with a cassette tape that was placed in front of the others: I Magnifici sette (The Magnificent Seven), number 30, year three. It was my first original cassette, if you'll forgive the term. And from there began a long journey that continues to this day, permeated by the desire to share everything. They called it piracy, and maybe we still wear the Jolly Roger. But after 40 years I can say one thing: it's also thanks to us pirates that this Home Computer has become a legend. And it is thanks to us, who never stopped sharing, that the software was not lost. Sharing has gone hand in hand with preserving and passing on this priceless treasure to future generations.

40 Years and counting, thanks for everything, Commodore 64!

ZX Spectrum, a fantastic 40-year-old

by Mic the Biker Novarina

In this year 2022 there are several important birthday parties: here we pay homage to the legendary Zx Spectrum, the glorious opponent of the Commodore 64 in the golden eighties. An opponent that deserves the utmost respect and that must be honoured with dignity, with its forty years of history and that still manages to amaze!

It saw the light, for the first time, on April 23, 1982 in the United Kingdom and became the best-selling microcomputer in Britain. The production site was located in Dundee, Scotland, in the Timex factory, now closed. During development, the two acronyms ZX81 Color and ZX82 were coined to identify the machine in question. Later, the name became ZX Spectrum, to emphasise the fact that the machine had a colour display, while its predecessor, the Zx81, was in black and white. In total the range consisted of eight models, which changed according to the technical equipment: from the basic level with 16 KB of RAM of 1982, up to the ZX Spectrum +3 with 128 KB of RAM and integrated floppy drive of 1987. Overall sales amounted to over 5 million units worldwide, not counting the unofficial clones.

The dawn of Home Computers

The Zx Spectrum was among the first home computers in the UK designed for the general public, just like the Commodore 64 in the US. Its market launch led to a boom of companies producing software and hardware for the machine. Its impact on society was incredible, to the point of being considered the machine that launched the British computer industry. This new revolution earned Clive Sinclair a knighthood for services to British industry.

The heart of the Zx Spectrum was based on a Zilog Z80, a CPU running at 3.5 MHz. For the clones, the NEC D780C-1 CPU was used. The original model has 16 KB of ROM and 16 KB or 48 KB of RAM. The hardware in question was the idea of Richard Altwasser, of Sinclair Research, while Rick Dickinson took care of the aesthetics.

The video output uses an RF modulator designed for use with contemporary televisions, all displayed with 32 columns and 24 rows and a palette of 15 colours. They are divided into seven tints with two brightness levels, plus black, while the resolution is 256×192. Altwasser patented a system to save memory in video management by storing the color separately from the bitmap of low-resolution pixels. This became something of a trademark in games for Zx, as pixels in an 8x8 block of characters share a foreground color and a background color. Programs, particularly games, had to be designed around this limitation, known as "Color Clash": interestingly, this limitation became a defining feature of the Spectrum.The sound of the machine was decidedly basic. The sound propagation is via a built-in buzzer, capable of producing a single 10-octave channel. Fortunately, later, it was possible to reproduce the two-channel audio through a specific software. The Spectrum included an expansion edge bus connector for the connection of a cassette recorder. It was used for loading and saving programs and various data. The cassette interface was very good: it allowed uploads five times faster than the old ZX81, precisely 1500 bits per second compared to 307. There were also 3.5 mm audio input/output ports: the "ear" port was for the use of headphones, while the "mic" port was for the line in connection.

ZX Spectrum and Sinclair Basic

In the machine's ROM we find the Sinclair BASIC interpreter, written by Steve Vickers under contract to Nine Tiles Ltd. The Spectrum's rubbery keyboard, similar in feel to calculators of the time, is marked with sets of keywords. For example, pressing "G" in programming mode enters the command "GO TO". This peculiar feature made the Sinclair BASIC easier to use. The ZX Spectrum character set also included lowercase letters. Spectrum BASIC supported multiple instruction lines, in addition to the above-mentioned keyword sets.

This iconic ZX Spectrum model is remembered for its rubbery keyboard, small size and distinctive rainbow pattern on the case. Its market launch was on 23 April

1982: with 16 KB of RAM it cost £125, while with 48 KB it cost £175. To further attack the market, in 1983 prices were reduced to £99 and £129 respectively. Various after market products began to arrive on the market to upgrade the machine: for the 16 KB computer, a 32 KB internal RAM module came out. For the first "Number 1" machines, which were slightly different, this module consisted of a daughter board. A ZX Spectrum "Number 1" can be recognized by the color of the keys, which are light gray. The number of these early machines amounts to 16,000 pieces, almost all of them in the serial number range from 001-000001 to 001-016000.

The explosion of peripherals

Sinclair released many peripherals to expand the machine: the first one was the printer, easy to make since the ZX Spectrum expansion bus was partially backward compatible with the ZX81 one. The ZX Interface1 add-on module included 8 KB of ROM, an RS-232 serial port, a LAN interface called ZX Net, and an interface for connecting up to eight ZX Microdrives. These were very fast but unreliable storage devices, released in 1983. Sinclair released the ZX Interface2, which added two joystick ports and a ROM cartridge port.

There were a plethora of third-party add-ons. The most popular and used were the Kempston joystick interface, the Morex Peripherals Centronics /RS-232 interface, and the Currah Microspeech unit for speech synthesis. Also very good were the Videoface Digitiser, and the Cheetah Marketing SpecDrum, a good drum machine.

During the mid-1980s, Telemap Group Ltd exploited the ZX Net, launching a pay-as-you-go service that was nothing short of revolutionary. This allowed users to connect their computers, via a Prism Micro Products VTX5000 modem, to Micronet 800. This service allowed a form of instant messaging and online shopping.

The ZX Spectrum Community

The ZX Spectrum has always had a very strong and rooted community. In the early days many commercially published magazines were dedicated to it. The most famous were Sinclair User in 1982, Your Spectrum in 1983, renamed Your Sinclair in 1986, and CRASH in 1984. In the early years, like all Home Computer magazines, the core of the publications was programming and contained many articles, typing programs and machine code tutorials. In the years to come there was the flood of game-oriented publications, comprising magazine and game cassette, strictly pirated.

Production of the car was officially discontinued in 1992, after over 5 million units had been sold. Years went by and many of them remained dormant in some trunk or in dusty cellars. Many users disposed of them, as if they were just plain useless old junk. But this little machine with the rainbow had not yet finished to amaze us, and in the last years, thanks to the return in pomp of the retrogaming phenomenon, are regularly coming out incredible games, that seem to exploit skills still unknown. Those unique little rubber buttons still have charm my friends, and still have many stories to write.

Biker's Thoughts

What great memories I have of the good ZX, even having never owned one. In our company, in the Borgo San Paolo Band, almost all of us had the Biscottone, but some owned other systems, going from the C16 to the MSX. And among them some were proud owners of ZX Spectrum. We warred with "Better my... No my... But you want to put," back in the 80's it was impossible not to. But when I sat down in front of the rubbery little thing, I had fun with it. Sure, it didn't have sound and cookie-cutter colors but it had some really fun games. It's nice to see the Spectrum world enjoying good health, with the constant release of absolutely wonderful games. Now the two cousins - rivals travel arm in arm looking at the horizon with a sly smile!

The modern heirs: MEGA 65

by Epsilon and Giampaolo Moraschi

In the 80's Commodore was making waves with the Commodore 64 and its affordable work/play machines. The company was developing a successor to the C64 called Commodore 65, a system that would combine some features of the previous machine (such as backwards compatibility) with some technological advances of the most innovative machines (I recommend you to read the page on Commodore 65 of English Wikipedia about it).

The idea was to have an advanced 8-bit system at a moderate cost but one that could cope with the impending technological change.

Eventually Commodore made some C65 prototypes in-house, but the project was abandoned. Some development units were sold off when the company went bankrupt in 1994. The machine, as far as is known, was never commercialized. A lucky few still have the rare developer versions, some working and some not.
These original systems are now selling for inhumane prices on Ebay.

A group of enthusiasts in 2015 formed a company called MEGA with the aim of recreating the C65 system in an FPGA design, but using the same functionality: disk drive, cartridge port and connections to peripherals of the time. A new case and a working keyboard. The machine was called MEGA 65, probably to avoid copyright issues with the Commodore name registered by others.
Building a new computer from scratch is a huge and complicated job. For some time I followed the development work on dedicated blogs. A difficult work but carried on with enthusiasm and determination.

Fig. 2 - The box

The system is absolutely not cheap. At about 800 euro (shipping excluded) it is not cheap, but considering the huge development effort and the cost of the hardware, at the end I think we can speak of a "suitable" price. Compared to the cost of the real C65 it is a real bargain.

The pandemic period affected component availability and packaging production and obviously led to a slippage in delivery dates. But in May 2022 the first batch of 400

Fig. 1 - The Mega 65

Fig. 3 - The case

Fig. 4 - Detail of the back of the case

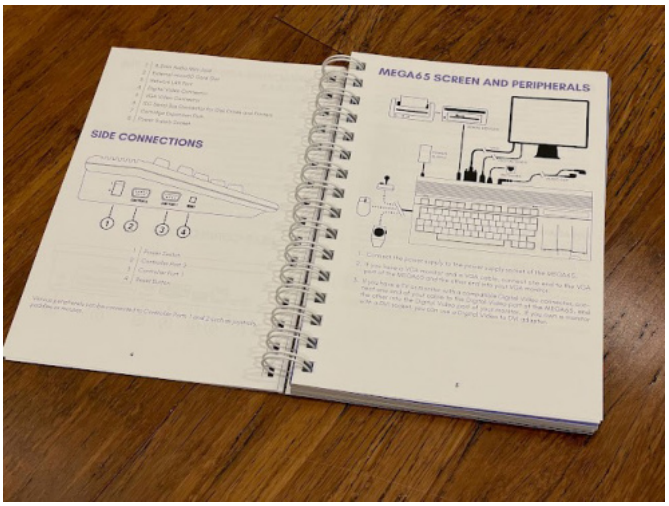


Fig. 5 - The manual provided with the MEGA 65

pre-orders were sent out. To be able to order and learn more about the Mega 65 you can visit the website at this address: https://mega65.org/
Already from the box you can see the care and the tribute to the wonderful world Commodore and C64.

The system includes some titles for the MEGA 65 and a new version of GEOS called GEOS65.
The case is very detailed and immediately you realize the great work and care.

Casing identical to the original prototype, with the internal 3.5 floppy drive and C128-style buttons.
The keyboard is mechanical and is really very precise.

There are power connectors, the one for the DB9 C64/128/ AMIGA/MEGADRIVE joysticks, the mouse port, the reset button, a cartridge port, the connector for the external 1541 floppy drive, a VGA output, an HDMI output with audio, network port and audio output.

The manual supplied with the MEGA 65 is spiral bound like the original C64 manual.

The paper is quality and the writing style and also the key icons used in the text are basically very similar. You can download updates to the manual from the mega65.org file repository.

On initial power up there is a setup screen to set date and time, VGA/HDMI output, PAL/NTSC and CRT emulation (adds scanlines to look like a crt display, but the effect is not the best).

Fig. 6 - The first start

MEGA65 FREEZE MENU V0.1.4
(C) MUSEUM OF ELECTRONIC GAMES & ART
F3-RESUME F5-RESET F7-SAVE TO SLOT
M = MONITOR
A = AUDIO & VOLUME
S = SPRITE EDITOR
OPERATING SYSTEM
TASK ID: 255
- PAUSED STATE -

Fig. 7 - Mega 65 Freeze menú

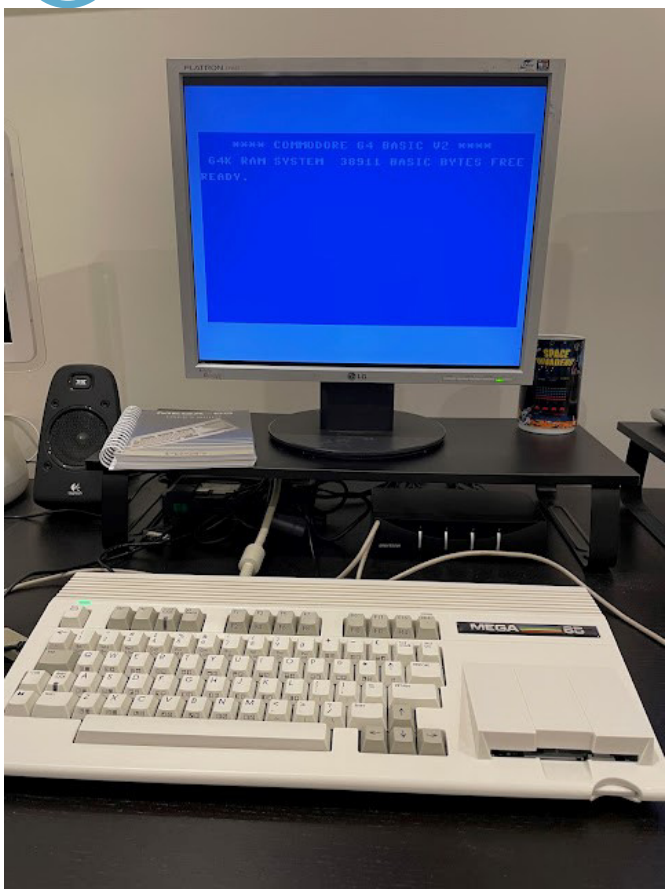


Fig. 8 - Commodore 64 mode

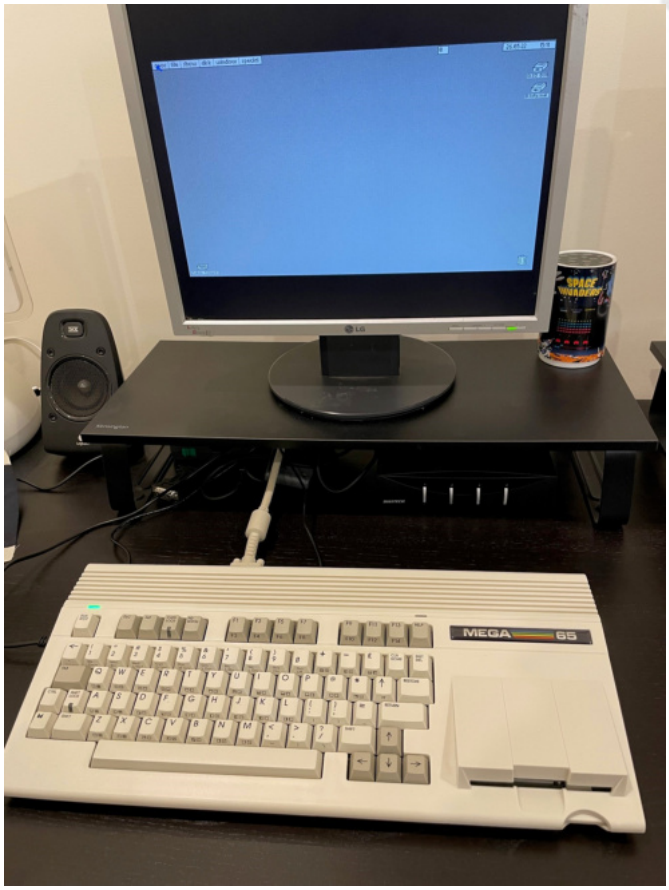


Fig. 9 - The high-resolution version of GEOS 65

Once set up, the system will automatically boot with a C65 demo disk stored on the internal SD Card, mounted using the Commodore 1565 virtual driver.
Pressing the reset button opens the lock status screen that allows us to change on the fly some options such as the joystick port, virtual drivers mounted on Drive 8 (internal SD virtual drive) and Drive 9 (external SD card virtual drive if present) and more.

It is compatible with the classic Amiga mouse, but also with the C64 1351 for GEOS applications. The Amiga mouse must be configured in the management screen.
The included introductory disk allows you to access some features like the Commodore 64 mode (you can also access it in Basic screen by typing GO 64).

There are some demos and games, some fun others less so but you can download a lot of stuff always on the Mega 65 repository on the official site.

Very beautiful the high resolution version of GEOS 65. Elegant and responsive.

Not all system options are operational but updates and some interesting implementations are planned.

In conclusion

I enjoyed the Mega 65 and it made two kinds of impressions. The first is that of a very interesting machine for future development. It is a new product that can give a lot if well developed and worked on.

The second was the "discovery" one. It allowed me to go back in time. The same effect the C64 had on me when I first plug it together. There is a lot of charm in this machine.

Can we talk about a legacy? I don't know, but the project is a good path forward.

The modern heirs: ZX SPECTRUM NEXT

by Giampaolo Moraschi

The Next is one of the heirs to the little 8-bit of the 1980s. It was born in 2010 in Brazil, as a variant of the TK95 Spectrum clone. In 2016 Victor Trucco and Fabio Belavenuto announced the development of a firmware called "TBBlue", a new motherboard and some announcements for the future. Announcements that came to fruition with the help of Henrique Olifiers who exported the brand to the UK with the approval of the parent company and set off on a kickstarter to make a brand new car in 2017.

At the end of the campaign 3,113 supporters allow the product to be realized.

Initially intended to use the ZX's original Z80 chip, eventually the high-performance Xilinx Spartan-6 FPGA was used which allowed for hardware sprite integration, scrolling and other advanced features within the machine. The "board only" version of the computer was delivered to backers of the campaign in 2017 and then a second kickstarter was launched in 2020 for the full version of the product.

Successful Kickstarter that reached the agreed funding (£250,000) within minutes.

The Design of the Next was done in part by the late Rick Dickinson (who also designed the 48 kb model and the Spectrum +).

The operating system of the Next is the NextZXOS. The system provides a graphical browser and menu-based access to functionality. In addition, the machine has an extended Basic interpreter called NextBasic, with added commands and functionality and support for 9-channel AY sound and an integrated sprite editor.

Both the OS and the Basic interpreter are written by Garry Lancaster and the machine comes with a manual that covers the functions of both applications in detail.

Next can run earlier versions of the Sinclair Basic, such as the 48K Basic and the 128K Basic.

Over time a number of "third party" software houses have sprung up to work on the machine. For example NxTel by Robin Varhagen Guest that offers a Teletext-style service accessible via Wi-FI or NextDAW by Gari Biasillo with a software for audio workstations able to use the capabilities of the Next in the creative field for Chiptunes music.

Several classic ZX games have either been updated or are being updated with improved graphics and sound. Among the most impressive is definitely Head over Heels.

NextOS and NextBasic were both released under a hybrid Open/Closed-source license called "The Next License", some parts of the operating system are closed by default unless placed under a MIT OPEN SOURCE license. The Next License prohibits software sales and duplication, but encourages free distribution. The OS and Basic are publicly hosted on Gitlab.

The hardware is released under a proprietary "mixed" license. The VHDL/Verilog for the FPGA digital design is available on Gitlab and licensed under GPL3. Everything else, schematics, pcb filemaster and keyboard model is

Fig. 1 - The NEXT in all its glory

Fig. 2 - TREASURE HUNTERS – one of the new games

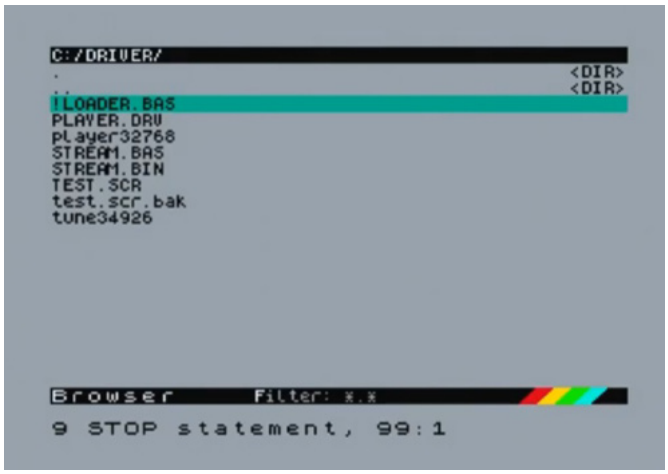


Fig. 3 - NextZX OS

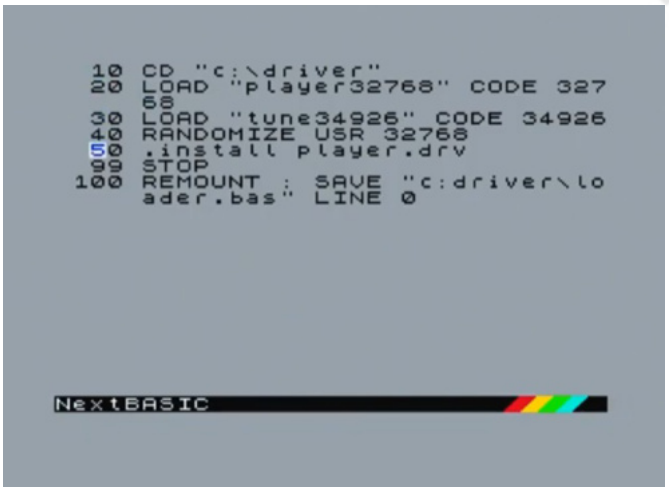


Fig. 4 - NEXT BASIC

closed.

The computer can play any Sinclair ZX80, ZX81 or earlier machine, as well as some unofficial clones. Cores from non Spectrum machines, such as Acorn BBC Micro, have also been released.

In conclusion

This is an interesting machine that I feel to define the real heir, but also the one that can open some interesting doors for the development of new software.

The official website is: https://www.specnext.com/

Sources

Website: https://www.specnext.com/

Publishing: Bush, Steve (April 28, 2017). "ZX Spectrum works again, with Z80 and optional Raspberry Pi Zero" - Electronics Weekly.

Specifications:

Processor: Z80N (Z80 compatible with additional instructions) implemented in FPGAs

Speed: 3.5, 7, 14 or 28 MHz

RAM: 1024 KiB basic (768 KiB free), 2048 KiB maximum (1792 KiB free), in 8 KiB banks paged in and out of Z80's 64 KiB address space; 256 KiB is reserved for ROMs

Graphics: 128 × 96 to 640 × 256 pixels

Color: Depending on mode and level, 16 or 256 colors without color contrast in some modes

Sprites: Up to 128 hardware sprites of 16 × 16 pixels

Sound: Traditional "Beeper," 3 programmable sound generators - General Instrument AY-3-8910 and 2 8-bit Dacs in FPGA.

Software: NextZXOS + NextBASIC operating system; earlier versions of Sinclair BASIC and optionally CP/M

Connectivity: Recorder input/output, audio output, HDMI, VGA/RGB, 2 Cursor/Kempston/Sinclair joystick connectors, PS/2 mouse port (Kempston mouse emulation), ZX Spectrum compatible expansion bus, Wi-Fi on selected models

Fig. 5 - HEAD OVER HEELS – new version for NEXT

ZX Spectrum+ 128K
(the latest official Sinclair Research Ltd model)

by Alberto Apostolo

Fig. 1

This ZX model is often misunderstood, because it is wrongly considered a "clone". It was indeed the last model officially produced by Sinclair Research Ltd before the company was sold to Amstrad (in 1986) and contained some noteworthy hardware features such as the General Instrument AY-3-8912 three-channel audio chip (produced under licence by japanese Yamaha and also incorporated in MSX computers).

Fig. 2

Origins

In the early 1980s, the European Union consisted of just 10 states and the free movement of goods was regulated by the Treaty of Rome in 1957 (followed by the Single European Act in 1986). Most computers were produced with keyboards and controls in English.

This was especially a disadvantage for Spain because it only became part of the EU on 1st January 1986 and because the computers were not set up to work with Spanish characters (ñ, accented letters, etc.).

To force manufacturers to introduce ñ and accents in equipment for sale in Spain, the Spanish government established high taxes by law on computers without the ability to function in Spanish [EM22].

Investrónica, a subsidiary of the distribution chain El Corte Inglés, the official distributor of Sinclair Research in Spain and software producer for the ZX Spectrum, was commissioned to design a new ZX Spectrum to fit the new Spanish regulations. Not only was it necessary to add the "ñ" key, but also to reprogram the entire ROM to translate

Fig. 3

Fig. 4: Spectrum+ with the "inves" logo.

New - the official Spectrum Upgrade!
Turn your Spectrum into a Spectrum+ for just £20
• Professional full-size keyboard – includes 17 extra keys.
• Responsive typewriter-style action.
• Accepts all current Spectrum software and peripherals.
• Complete with 80-page User Guide and Companion Cassette.
Here's some exciting news for 48K Spectrum owners ... the official Spectrum Upgrade Kit.
The £20 Kit has everything you need to turn your Spectrum into the stylish new Spectrum +. You don't even need an understanding of electronics, just the ability to solder a few wires together! The leaflet in the kit gives clear, step by step instructions.
If you're not sure about doing it yourself, don't worry. Simply return your 48K Spectrum to Sinclair and for £30 we'll upgrade it for you.
Whichever you decide on, you'll also receive the new 80-page User Guide and Companion Cassette.
The bigger, better Spectrum keyboard
The Spectrum + measures 12½" x 6" It has a large typewriter-style keyboard, with hard, moulded keys.
You'll find the new keyboard has a smooth, positive action – ideal for touch-typing, word processing, simulation programs, and extended programming sessions. Two retractable legs give a perfect typing position.
There are 58 keys in all, including 17 new keys. Programmers will be pleased to see dedicated punctuation keys, a space bar, and separate shift keys for graphics and extended modes. And a reset button allows you to clear a program from your computer's memory without disconnecting the power supply.
The official Spectrum Upgrade
Naturally your upgraded computer will accept all the peripherals in your Sinclair system - Interface 1, Microdrives and so on - as well as all Spectrum software.
Just as important, new Spectrum software and peripherals will be designed with the Spectrum + in mind. So the Sinclair upgrade adds stylish looks, new capabilities ... and new potential for the future.
Included – the new Spectrum + User Guide and Companion Cassette
The new User Guide has over 80 pages of information, including a handy BASIC dictionary. The Companion Cassette provides an interactive tour of the new keyboard, and includes three entertaining arcade games.
TO ORDER BY MAIL:
When ordering the Upgrade Service, send off your 48K Spectrum to the address below, carefully wrapped, together with the completed coupon and appropriate payment. (Please do not return the mains adaptor, manual or other ancillaries.) Your upgraded computer will be despatched to you within 10 days of receiving your order.
When ordering the Upgrade Kit, simply complete the coupon, enclosing the appropriate payment and post it to us at the address below. Please allow up to 28 days for delivery.
BY PHONE: Access or Barclaycard holders can call Camberley (0276) 685311 for personal attention, 9am to 5pm Monday to Friday. Only the Upgrade Kits can be ordered by phone.
Please note: the upgrade offer applies to working 48K Spectrum models in the UK only.
To: Sinclair Research Limited, Upgrade Dept., Stanhope Road, Camberley, Surrey, GU15 3PS.
All prices include VAT, post and packing, User Guide and Companion Cassette.
Please send me the Spectrum + Upgrade Kit. I enclose payment of £20.
OR
Please upgrade my 48K Spectrum for me. I enclose my computer together with payment of £30.
I enclose a cheque/postal order payable to Sinclair Research Limited for £
OR
Please charge my Access/Barclaycard no.
Signature
PLEASE PRINT
Name: Mr/Mrs/Ms
Address
Sinclair Research Limited, Upgrade Department, Stanhope Road, Camberley, Surrey, GU15 3PS.
sinclair

Fig. 5

Fig. 6

Fig. 7 (ESP)

Fig. 8 (ENG)

messages into Spanish and, taking into account user complaints, to change the original ZX Spectrum's rubber keyboard with a much more robust one. The design (started in June 1984) resulted in the ZX Spectrum+ released in October 1984, the first home-computer to be marketed in Spain before being sold anywhere else in the world (fig. 2-3-4) [EM22].

The keyboard was similar to that of the Sinclair QL and also had a small reset button. To upgrade older Spectrum computers, a special kit was on sale (fig. 5).

The "Derby" project

Further government measures led to the taxation of computers with a memory of 64KB or less [MG22].

In 1985, Investrónica proposed to Sinclair to further improve the ZX Spectrum and designed the ZX Spectrum+ 128K (codenamed "Derby") with more RAM, improvements in the BASIC interpreter, an improved audio chip and different I/O connections. In addition, there was a numeric keypad (fig. 6) connected by cable to the computer.

The machine was first presented in September 1985 at the SIMO '85 trade fair in Spain, with a price tag of 44250 pesetas. Due to the large number of unsold Spectrum+ models, Sinclair decided to start selling it in the UK only in January 1986 at a price of £179.95. No external keyboard was available for the UK version, although the ROM routines for using it and the port itself, which was hastily renamed "AUX", remained. Clive Sinclair's decisions crippled sales of the 128K, worsening the financial situation of Sinclair Research Ltd.

The Spanish version was recognisable by the "128K" logo in white (at the bottom of the computer, fig. 7), while the British (and the rest of Europe) version had the same logo in red (fig. 8). Also in the boot phase, the Spanish version (fig. 9) differed from the British one, which had a menu with the following options (fig. 10) [OC22]:

1) "Tape Loader" to launch programmes on tape,
2) "Calculator" for arithmetic operations without using the PRINT command,
3) "Tape Tester" for checking the quality of the tape recorder,
4) "48 BASIC" mode ("normal" Spectrum+ with 16KB ROM and 48KB RAM, keypad disabled),
5) "128 BASIC" mode (16KB ROM "extended" BASIC with full editor and 128KB RAM using bank-switching technique).

Because of the external heat sink (on the side of the keyboard) the 128K was nicknamed "toastrack".

Around 30000 units were built. After being sold to Amstrad, the 128K was slightly modified, evolving into the ZX Spectrum +2 (fig. 11).

Technical Characteristics

In fig. 12 a short technical data sheet is shown as the mother board in fig. 13. In fig. 14 the front side with the 'KEY PAD' socket for connecting the numeric keypad is shown. Fig.15 shows the 9V DC power socket, Edge Connector, the 7-pin RGB output (diagram in fig. 16) and the TV output with coaxial cable. Fig. 17 shows the left side with the reset button, the EAR and MIC sockets for the tape recorder and the RS232 port.

The Z80 processor used in the Spectrum has a 16-bit address bus, which means that only 64 kB of memory can be addressed. To facilitate the addition of 80 KB of RAM, the designers used a bank-switching technique so that the new memory was available in six 16 KB pages at the top of the address space.

The same technique was also used to switch between the new 16 KB editor ROM and the original 16 KB BASIC ROM at the bottom of the address space.

The new sound chip and MIDI output capabilities were handled by the BASIC programming language (128 BASIC mode) with the PLAY command, and a new SPECTRUM command was added to switch the machine to 48K mode.

To enable BASIC programmers to access the additional memory, a RAM "disk" was created in which files could be stored in the additional 80 KB of RAM. The tokens of the two new commands took the reserved place of two existing user-defined characters, causing compatibility problems with some BASIC programs.

The Edge Connector was used to connect: Interface 1 (MicroDrive), Interface 2 (Joystick), unofficial Floppy Disc Drive devices and joysticks.

The ZX Printer only worked in 48 BASIC mode. For other types of printer, it was convenient to use the RS232 connection.

There was no dedicated MIDI output. In 128 BASIC mode, the PLAY command sent a MIDI signal through the RS232 port (see 128K Manual).

In [WK22] bugs are reported concerning the HAL10H8 chip which could cause system crashes in some cases. In addition, it is reported that the keyboard for Investrónica's Spanish 128K was incompatible with some British machines. The 6K version boards were supplying an incorrect voltage to the keypad. The problem was solved in the 6U version by replacing R137.

For those wishing to learn more about the 128K, you can start with the links in Bibliography (e.g. [ST22] and [WS22]) and then expand the search to other Sinclair computer enthusiasts' web pages.

Fig. 9

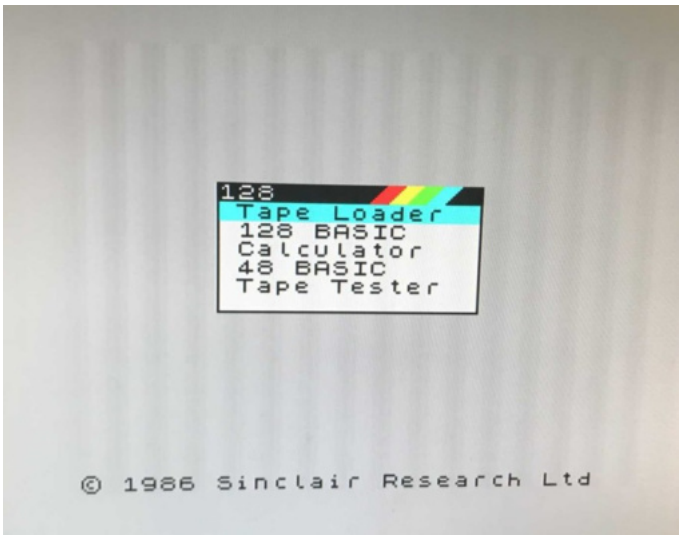


Fig. 10

Fig. 11

Sinclair ZX Spectrum+ 128K

CPU: Zilog Z80 A

SPEED: 3.5469MHz

RAM: 128kb

ROM: 32kb (16k 48k Basic + 16k 128k Basic)

TEXT MODES: 32 x 24 [character]

GRAPHIC MODES: 256 x 192 [pixel]

COLORS: 8 with two tones each (normal and bright)

SOUND; 3 channels, 7 octaves (AY-3-8912)

SIZE: 320 [mm] x 150 [mm] x 45 [mm]

I/O: Edge Connector, RGB, TV, EAR, MIC, RS 232, KEYPAD

Fig. 12

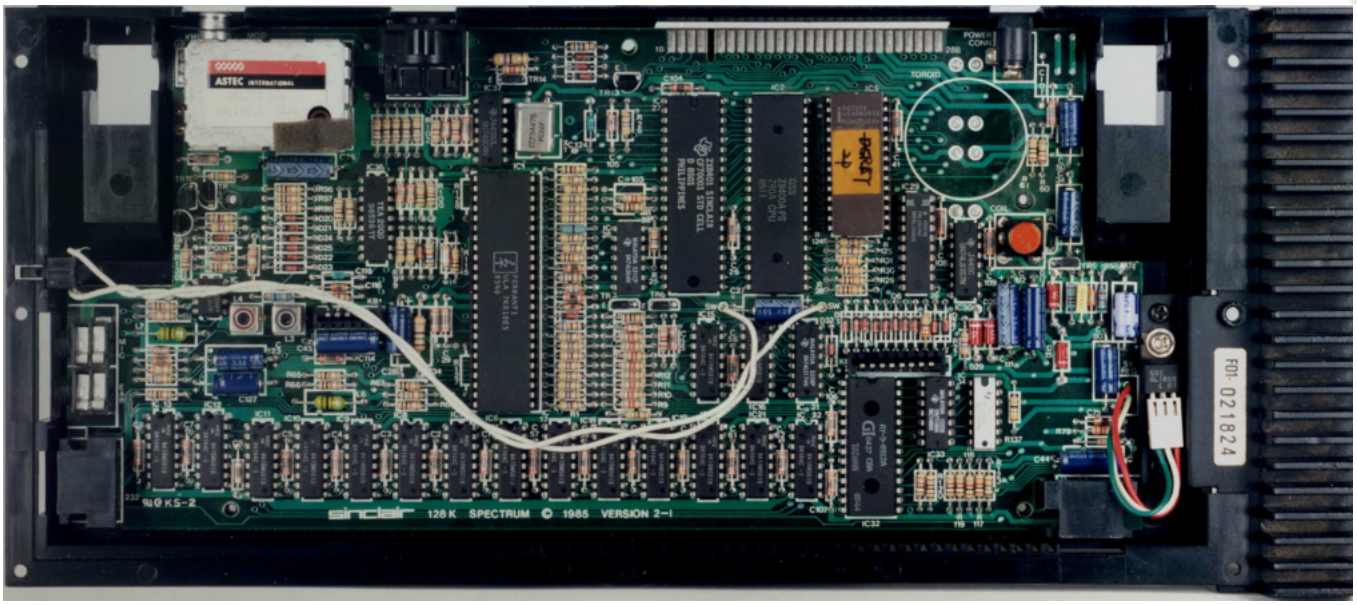
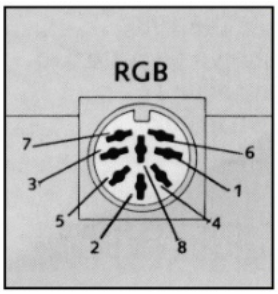


Fig. 13

Fig. 14

Fig. 15



Pin	Signal	Level
1	Composite PAL	75 Ohms, 1.2 Volts pk-pk
2	0 Volts DC	
3	Bright output	TTL
4	Composite sync	TTL
5	Vertical sync	TTL
6	Green	TTL
7	Red	TTL
8	Blue	TTL

Fig. 16

Fig. 17

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[MG22] (retrieved 09/07/2022) https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/z/ZX_Spectrum.htm
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A bit of rarity

(rummaging here and there)

Oldies but goldies: books for Commodore 64

by Alberto Apostolo

Seek, and you will find (Luke, 11:9-10)

Many books have been published for the Commodore 64. Some are for beginners, others for those who want to deepen their knowledge and make the most of the possibilities of the hardware.

In this paper, we present a small selection of old publications still considered useful for enthusiasts and owners of this iconic computer.

Searching carefully on the Web, some enthusiast may have put them up for sale or digitised them in pdf format to be downloaded (more or less freely). In the second case, be careful because copyright may still be valid despite the fact that they are books published many years ago (and somehow commercially "dead").

RMW does not derive any financial benefit from such suggestions and we do not exclude that better and more interesting texts may be available, leaving the reader free to expand the search and make his own choices.

Creating your own games with the C64

If you would like to be guided step by step in the creation of your own arcade game, "CREATING ARCADE GAMES ON THE COMMODORE 64" by Robert

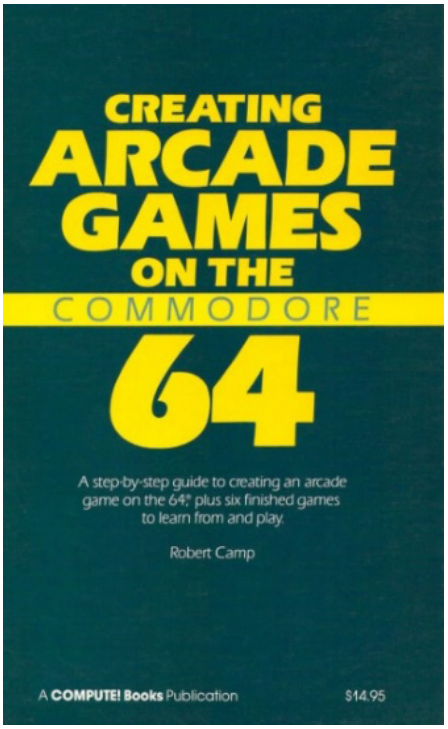


Fig.1

Fig.2

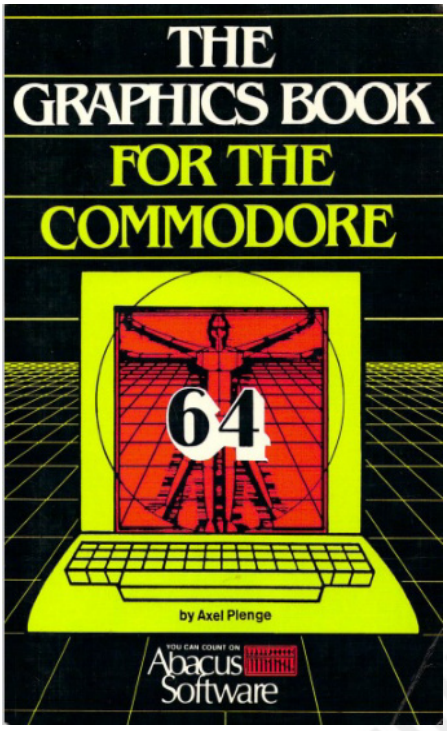


Fig.3

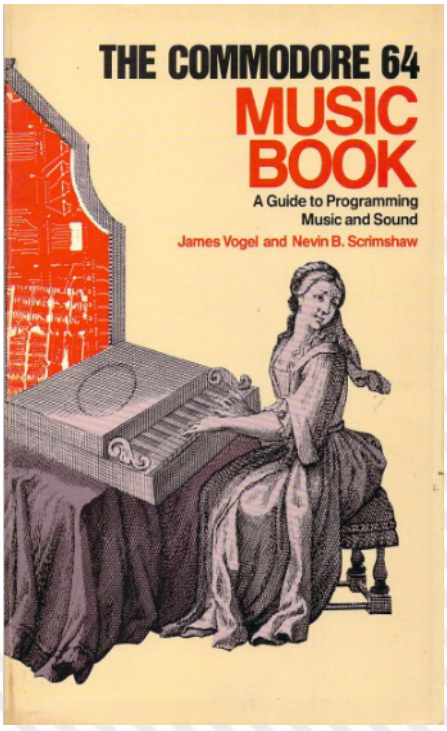


Fig.4

Camp may be just the guide you are looking for (Fig.1) because the stages of designing a game are explained (invention of a story, analysis, handling graphics, movements, collisions, music and sound effects, etc.).

Those who do not know how to program can still learn how to develop the art of creating video games and then feel like a refined gourmet as he furiously juggles the joystick of his console from the comfort of his armchair in front of the screen.

Graphics and plotting functions on the C64

In the standard BASIC there are no explicit commands to exploit graphics on the C64.

However, for Italian speaking readers, Franco Muzzio & C. Editore published "Grafici di funzioni con il C64, il Plus4 e il C16" by Carlo Sintini and Costantino Mustacchio (Fig.2).

On the other hand, "THE GRAPHICS BOOK FOR COMMODORE 64" by Axel Plenge (Fig.3) is noteworthy.

In both books, it is explained how to graph a function and how to circumvent a BASIC limitation that does not allow dynamic parsing to calculate the value of a function contained in an X$ string accepted with an INPUT command.

Fig.5

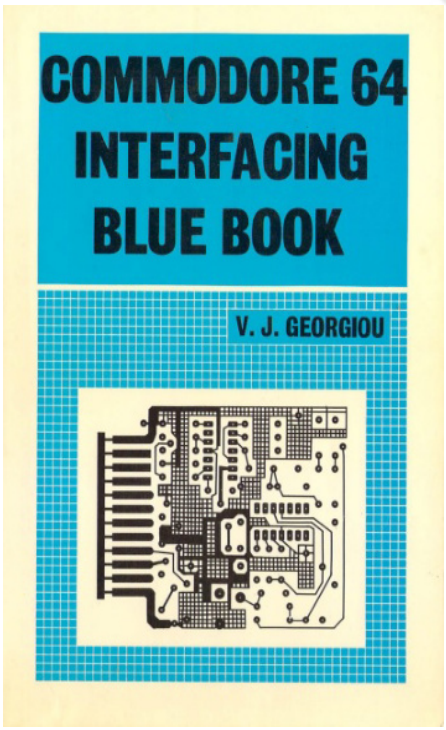


Fig.6

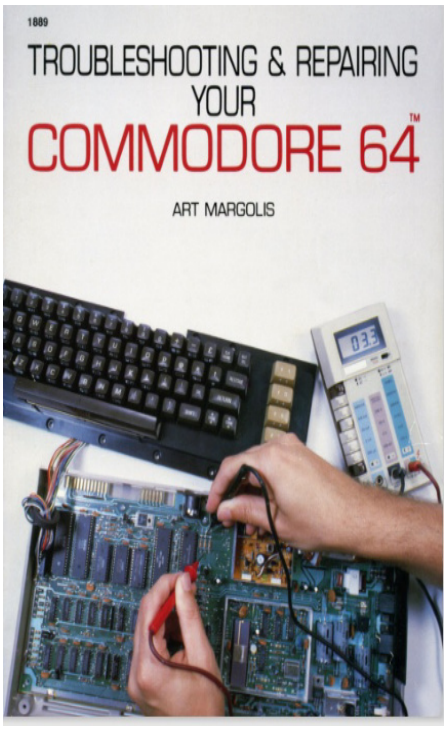


Fig.7

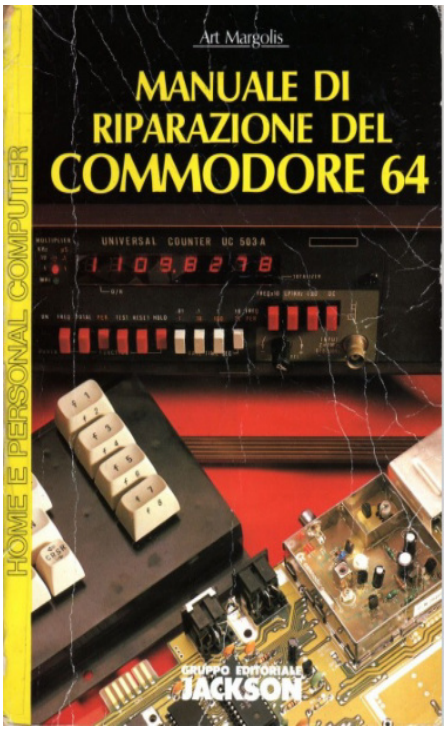


Fig.8

Music with the C64

Again, the standard BASIC does not offer any specialised commands.

Reading "THE COMMODORE 64 MUSIC BOOK" by James Vogel and Nevin B. Scrimshaw (Fig.4) one starts with the basics of programming to get to the point of generating sound effects and translating a musical score into a BASIC program, exploiting the potential of the SID (Sound Interface Device) built into the C64 hardware.

Machine Language with the C64

It is not easy to program in machine language, but you have to start somewhere. "Commodore 64 Machine Language for the Absolute Beginner" by Danny Davis (Fig.5) might be the right book. In Appendix 13, the ALPA Assembly Language Programming Aid) program listing is offered to help in writing machine language programs. The only disadvantage is that one must be very patient because ALPA is a very long program to type by hand.

Electronics Experiments for C64

For those who wish to experiment with interfacing small circuits to the C64,

"COMMODORE 64 INTERFACING BLUE BOOK" by V.J.Georgiu (Fig.6) will be an opportunity to get serious, starting with connecting a perfboard to the C64 and ending with controlling more complicated devices.

How to Repair a C64

Art Margolis wrote "Troubleshooting & repairing your commodore 64" (Fig. 7) of which there is also the Italian version "Commodore 64 Repair Manual" published by Gruppo Editoriale Jackson (Fig.8).

Unfortunately, it often happens that one pulls out a C64 from a dusty trunk in the attic to sadly realise that (after so many years of inactivity) it no longer works for some reason. Electronics enthusiasts and computer repairmen will find a lot of information here, while a beginner might attempt a diagnosis before entrusting his C64 to the loving care of an expert.

As a complement to Art Margolis' manual, there is "The Complete Commodore Inner Space Anthology" by Karl J.H. Hildon (Fig.9), a collection of tables, diagrams, data sheets and many other (useful ?) things like formulas for the volumes of geometric solids and telephone numbers of old American and Canadian BBSs.

Similar to Hildon's anthology (but without unnecessary digressions), Sheldon Leemon's "Mapping the Commodore 64" (Fig.10) is worth a look by anyone programming in machine language.

The 1541 disk drive

For those who also own the 1541 disk drive, there will be no more secrets with "THE ANATOMY OF THE 1541 DISK DRIVE" by Lothar Englisch and Norbert Szczepanowski (Fig.11). In contrast, 'Commodore 1541 Troubleshooting & Repairing Guide', written by Michael G. Peltier, is a manual for diagnostics and repairs (Fig.12).

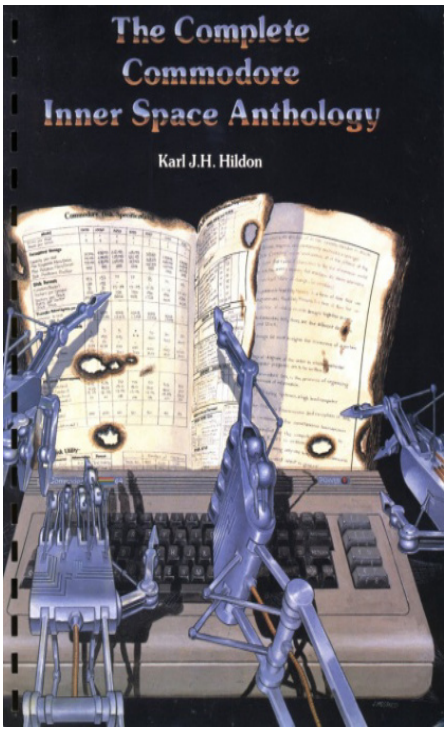


Fig.9

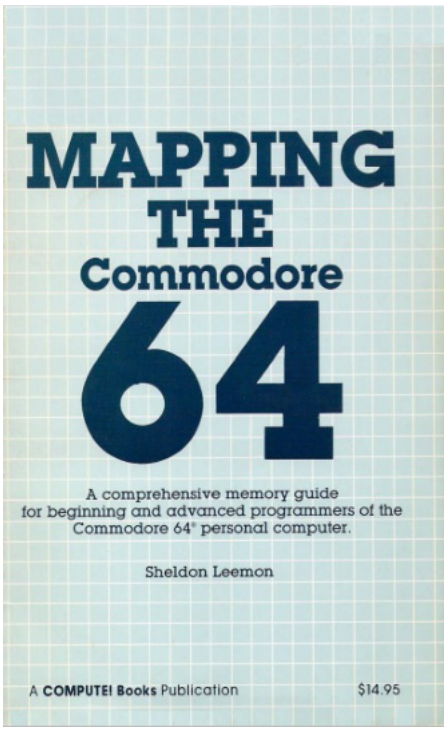


Fig.10

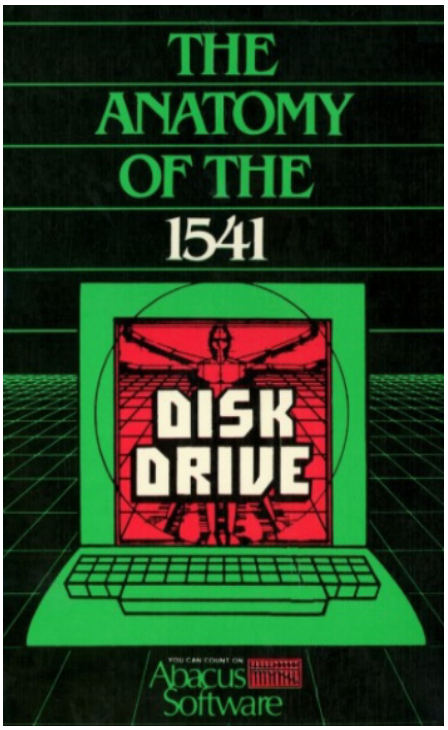


Fig.11

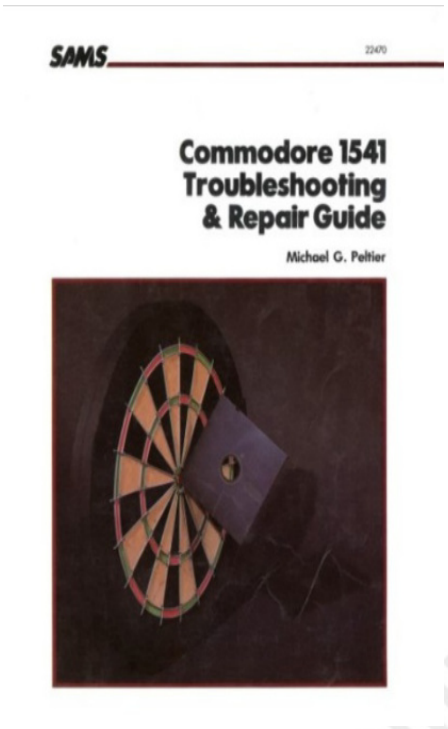


Fig.12

C64 Emulator, a surprising emulator...

by Francesco Fiorentini

There are a lot of Commodore 64 emulators. If you are neophytes take a look at the article of Daniele Brahimi in this same issue "C64 and ZX Spectrum in our days" to know the two most famous ones.

There are even online emulators that can be used from the browser, without the need to download anything to enjoy the games that we have loved so much or the novelties that are coming out at an increasingly fast pace. This one that I'm about to present can be used online or it can be downloaded. And it is precisely by downloading it that it allows you to access a feature that I think is quite interesting.

I'm talking about **Thomas Hochgoetz's C64 Emulator**.

The project has of course its own website which can be reached at:

https://c64emulator.111mb.de/index.php.

c64 emulator
C64 Emulator
Download
Application
Create your own C64.exe
C64 Emulator Extensions
C64 SID Music Corner
C64 JavaScript Emulator
C64 JavaScript Highscore
C64 JavaScript Multiplayer
C64 Emulator Android App
C64 Emulator Raspberry PI
Screenshots
C64 Documentation
Snapshot Upload Area
Explore D64 Directory
License
Links
Community - Forum
Imprint
RECENT UPDATES
C64 Emulator
The Commodore 64 computer was one of the first and most sold home computer in the 80's. Equipped with video, sound and two joysticks the C64 was the perfect platform for games. This is one of the reason why so many games were made for this computer.
This private project emulates an old C64 computer and makes it easy to get into the world of the C64 games. The original games are resurrected in their at that time saved format. It was fun to develop this project and the users maybe have fun too!
Create your own C64.exe with included games or go to the downloads!
Try the new JavaScript C64 Emulator running direct in your browser!
Windows
Online
Android
Raspberry
Introduction
This project is a Commodore 64 computer emulator and makes all electronic parts of the C64 hardware and the 1541 Floppy device through software available. The emulator itself is provided in a single exe file that is copied on the local computer. Although the project is still in development state many games are already working.

Fig. 1 - Website of C64 Emulator

At a first glance, the program may seem rather bare, is in fact visible only a small menu accessible with the mouse at the top right, but clicking on the second icon, the one after the question mark, you can access the menu of the emulator itself.

Personally the menu reminded me the CCS64 one, another emulator for the little Commodore. From here it is possible to manage the options for graphics, sound, floppy, tape, joystick, keyboard and... Network. This item is one of the two surprises, but we will see it later.

By clicking on Load File it is possible to load all formats commonly supported by C64 emulators.

Although all the files used in our tests worked correctly, Thomas states that the project is still under development although many games are already working.

Fig. 2 - The disk status indicator (lower left).

Once the game is loaded you can play it using the default key configuration:
Joystick movements: Directional arrows
Joystick Fire button: left CTRL button

Personally I feel very comfortable with this key combination, since it's the one I usually configure in VICE. :-)

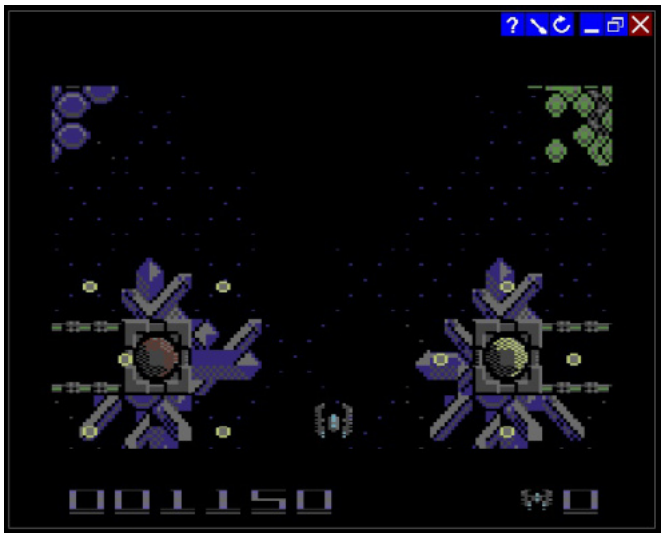
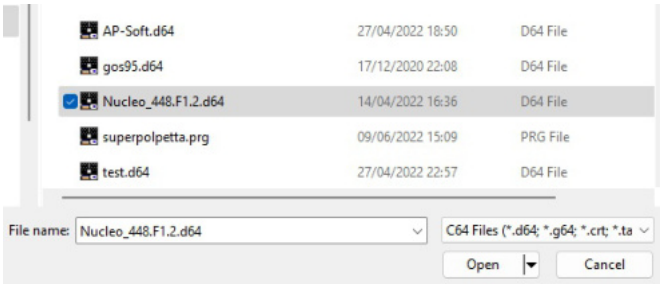


Fig. 3 - Nucleo 448 works like a charm!

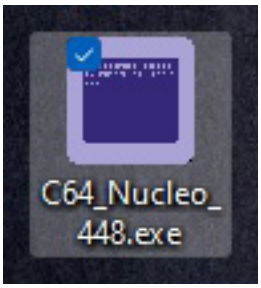
But since I mentioned surprises in the title, let's find out the first one together.

With C64 Emulator it is possible to **create custom EXE files** (C64.exe) that contain the game or games you prefer and run them with a double click directly from Windows. Personally I find it a very interesting idea: it will give us the possibility to give to friends and acquaintances who are not familiar with emulators, configurations and file formats, the possibility to play all the Commodore 64 software, old and new.

Creating an executable to distribute is quite simple, you just need to prepare the file you want to include in your EXE file following these guidelines:
D64 Disk - File_name.zy.x.d64
T64 Tape - File_name.zy.x.t64
CRT Cartridge - File_name.x.crt
PRG Program - File_name.x.prg
Snapshot S64 - filename.x.s64
SID - Filename.s.sid
The values z,y,x,s, correspond to the following items:
z - Loading mode F=Fast, N=Normal*.
y - Number of rows starting from 1
x - Joystick port number: 1 or 2
s - For SIDs, track number starting from 1
*Fast mode: loads the file directly into RAM
*Normal Mode: Loads the file in the usual C64-Floppy way into RAM
Once launched the emulator we must enter the Misc menu, choose the Create Game Exe item and select the file that we have just renamed.


AP-Soft.d64 27/04/2022 18:50 D64 File
gos95.d64 17/12/2020 22:08 D64 File
Nucleo_448.F1.2.d64 14/04/2022 16:36 D64 File
superpolpetta.prg 09/06/2022 15:09 PRG File
test.d64 27/04/2022 22:57 D64 File
File name: Nucleo_448.F1.2.d64
C64 Files (*.d64; *.g64; *.crt; *.ta
Open
Cancel

Then just name the executable file, the default is C64.EXE, and you're done!
The resulting file is not very small, in fact it has a size of about 1 MB, but I think that nowadays is not an insurmountable obstacle considering the advantage of distributing a game that will start with a simple double click.



Too bad you can't choose the icon to go with the executable file, the default one is pretty anonymous. Maybe I can try to suggest it to Thomas as a future enhancement.

But the surprises don't end here. The **C64 Emulator supports network play**! One of the players has to start the server from the menu item **Network - Game Host Server**. All other players can connect to this server by activating the network client from Network - Join a game. In a private network the game server will be found automatically.
Have fun!

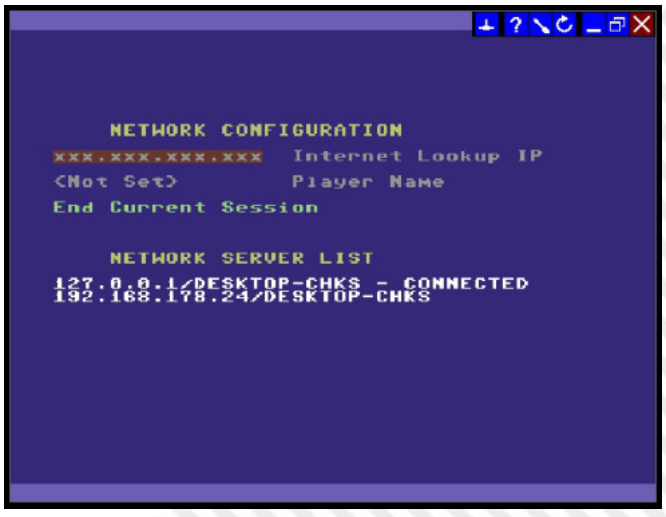


Fig. 4 - Network configuration (notice the new icon appeared in the top right menu, the first one)

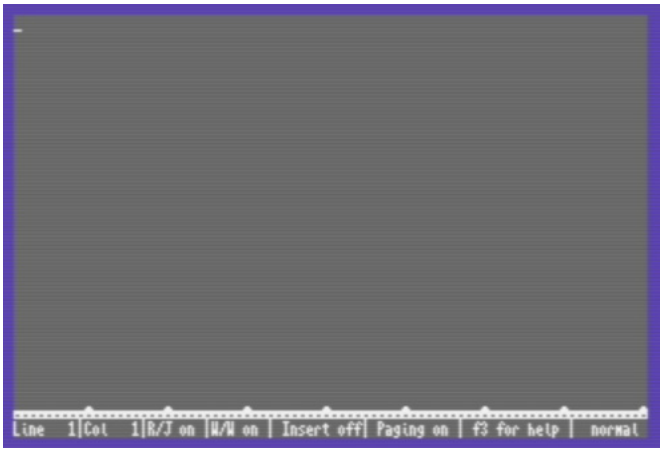
TASWORD - Word Processing for C64 and ZX Spectrum

by Francesco Fiorentini

Those who follow my articles on RetroMagazine World know that, besides games, I have a soft spot for retro-applications. The reason is easy to say; at the time they were the tool that allowed these machines to be used for production or educational purposes and I like to understand their potential compared to modern software.

The software we are going to describe in these pages is an example of **Word Processing**, i.e. a word processing program.

Tasword 64 is the Commodore 64 version of the famous word processing program **Tasword**, made by the British company **Tasman Software**.



Originally born for ZX Spectrum, this software has been ported to almost all 8 bit machines: Amstrad CPC, MSX, Commodore 64, Tatung Einstein, SAM Coupe... The peculiarity of the ZX Spectrum version was the possibility to use a font of 64 characters per line in the standard screen. But let's have a closer look to the Commodore 64 version.

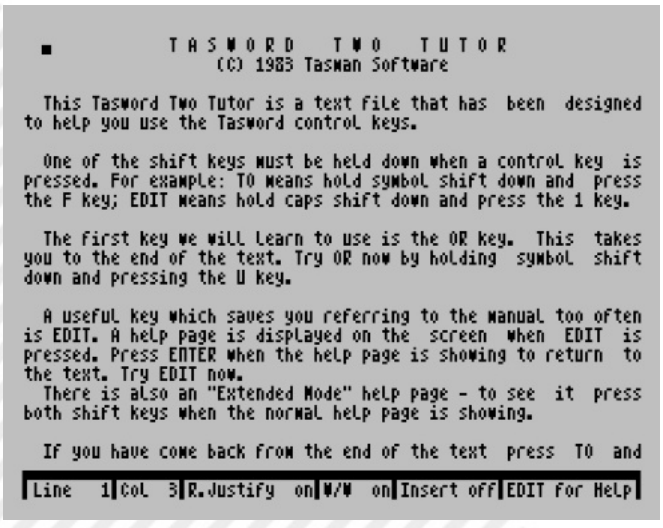

TASWORD TWO TUTOR
(C) 1983 Tasman Software
This Tasword Two Tutor is a text file that has been designed to help you use the Tasword control keys.
One of the shift keys must be held down when a control key is pressed. For example: TO means hold symbol shift down and press the F key; EDIT means hold caps shift down and press the 1 key.
The first key we will learn to use is the OR key. This takes you to the end of the text. Try OR now by holding symbol shift down and pressing the U key.
A useful key which saves you referring to the manual too often is EDIT. A help page is displayed on the screen when EDIT is pressed. Press ENTER when the help page is showing to return to the text. Try EDIT now.
There is also an "Extended Mode" help page - to see it press both shift keys when the normal help page is showing.
If you have come back from the end of the text press TO and
Line 1|Col 3|R.Justify on|W/W on|Insert off|EDIT for Help

Fig. 1 - Tasword a 64 colonne su ZX Spectrum

As soon as the program starts, the peculiarity of this conversion jumps immediately to the eyes.

Yes, this program allows you to write text on our beloved cookie in 80 columns. It almost seems that our 8 bit has suddenly turned into its big brother, the Commodore 128.

In a previous issue of RetroMagazine we reviewed two 8-bit chess programs (namely, Cyrus Chess I on ZX Spectrum 48K and Colossus Chess 3.0 on Atari 800XL) and we made them play against each other in a quick match of 6 games. We also took stock of the playing strength of the most popular chess engines in recent years. For the sake of completeness, in the same article we introduced AlphaZero, the AI software by DeepMind/Google, which in a quite surprising way appeared on the market and proved to be able to defeat without appeal all the traditional chess engines such as Stockfish, Komodo, Deep Shredder, Houdini, Fritz, etc. How did it accomplish this hard task? By beating Stockfish 8 (one of the strongest engines around, scoring about 3400 ELO points) in December 2017 in a match of 100 games. Alphazero won 28 times, 25 of which playing with White,
Line 1|Col 1|R/J on |W/W on | Insert off| Paging on | f3 for help | normal

Note that although the font size has been compressed to allow the 80 columns to be displayed, the whole thing is still very readable.

This denotes the care that has been taken in designing the fonts, further confirming the goodness of the whole software package.

Of course it is possible to return to the normal 40 columns. To do this just press CTRL+O and, almost instantly, the screen will change graphical aspect.

In a previous issue of RetroMagazine we reviewed two 8-bit chess programs (namely, Cyrus Chess I on ZX Spectrum 48K and Colossus Chess 3.0 on Atari 800XL) and we made them play against each other in a quick match of 6 games. We also took stock of the playing strength of the most popular chess engines in recent years. For the sake of completeness, in the same article we introduced AlphaZero, the AI software by DeepMind/Google, which in a quite surprising way appeared on the market and proved to be able to defeat without appeal all the traditional chess engines such as Stockfish, Komodo, Deep Shredder, Houdini, Fritz, etc. How did it accomplish this hard task? By beating Stockfish 8 (one of the strongest engines around, scoring about 3400 ELO points) in December 2017 in a match of 100 games. Alphazero won 28 times, 25 of which playing with White,
Line 1 Col 1 R/J W/W Pag norm

I want to emphasize the speed with which the program goes from 40 to 80 columns and vice versa. Very impressive,

try it yourself...

But this is just the icing on the cake of a really well made program which is equipped with an incredible range of functions, as witnessed by the more than 40 pages of the manual (also of excellent workmanship) and the exhaustive on-line help (recallable with F3).

T A S W O R D 6 4 H E L P P A G E
CURSOR CONTROL
Δ↑ start of text Δ* end of text
Δ[start of line Δ] end of line
f1 scroll up f7 scroll down
Δf1 fast scroll up Δf7 fast scroll down
Δ< word left Δ> word right
HOME top of display Δ0 40/80 columns
FORMATTING COMMANDS
ΔQ move text left ΔE move text right
ΔW centre line ΔU hard justify
ΔK justify line ΔL unjustify line
ΔJ justify para
SWITCHES
ΔP paging on/off ΔH insert on/off
ΔG wordwrap on/off ΔF Justify on/off
TEXT FILE COMMANDS
ΔRETURN for save/load/merge/print/clear
Δ = CTRL f3 for more help ▼ = SHIFT
Press RETURN to get back to text file

T A S W O R D 6 4 H E L P P A G E
TAB AND MARGIN COMMANDS
LEFT ARROW goto next tab stop to right
ΔLEFT ARROW set/reset tab stop
ΔZ clear tab stops ΔX reset tab stops
ΔA set left margin ΔD set right margin
ΔS reset margins
DELETE & INSERT
DEL delete char ΔDEL delete word
ΔCLR delete line ▼CLR delete char
ΔI insert line ▼INST insert space
BLOCK COMMANDS
ΔV mark end block ΔB mark start block
Δ@ cancel markers ΔC delete block
ΔN copy block ΔM move block
PRINTER COMMANDS
Δ6 put header Δ7 put footer
ΔT get header FORM FEED ΔY get footer
Δ = CTRL f3 for more help ▼ = SHIFT
Press RETURN to get back to text file

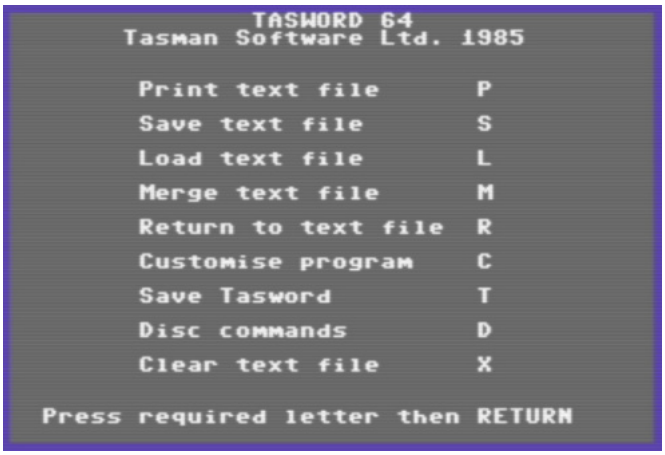
T A S W O R D 6 4 H E L P P A G E
OTHER COMMANDS
ΔR find & replace ΔSPACE print chars
Δ+ lower to caps Δ- caps to lower
PRINTER CONTROL CHARACTERS
(a) enlarged on (b) enlarged off
(c) condensed on (d) condensed off
(e) underline on (f) underline off
(g) italics on (h) italics off
(i) emphasise on (j) emphasise off
(k) dbl strike on (l) dbl strike off
(m) elite on (n) elite off
(o) proportional on (p) propor'al off
(q) double width on (r) standard on
(s) reverse on (t) reverse off
EXTRA CHARACTERS
Δ = CTRL f3 for more help ▼ = SHIFT
Press RETURN to get back to text file

The three screens of the online help, which you can see above, are extremely useful when using the program as all functions must be called via keyboard shortcuts.

Note, in addition to the functions of alignment, text justification, pagination, setting margins and tabs, search and replace strings, editing text blocks..., also a large number of characters that can be sent to the printer to enable a series of features such as: expanded, condensed, underlined, proportional, double width, reverse mode...

Definitely an impressive number of options that not all software of the time gave the possibility to access.

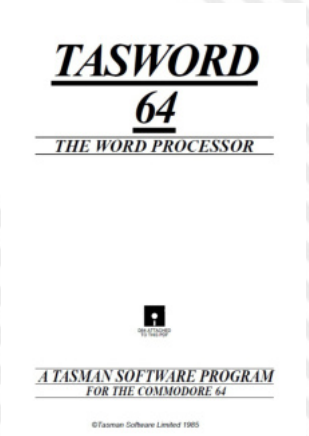
By pressing CTRL+RETURN you can access the file management menu:



Where you can print, save, load and merge text files generated by Tasword 64...

And even create your own copy of this software: **Customise Program and Save Tasword**.

As if that weren't enough, the whole program resides in a single file of 92 blocks, so much so that it was distributed on cassette at the time. Unbelievable!



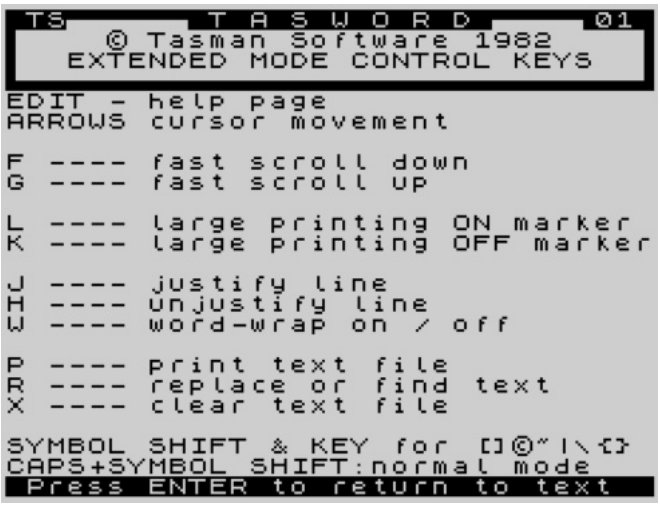
If you want to try Tasword 64 you can find it on **CSDB**: https://csdb.dk/release/?id=86426

While the manual can be found on the **Bombjack** website: https://commodore.bombjack.org/commodore/applications/Tasword64.pdf

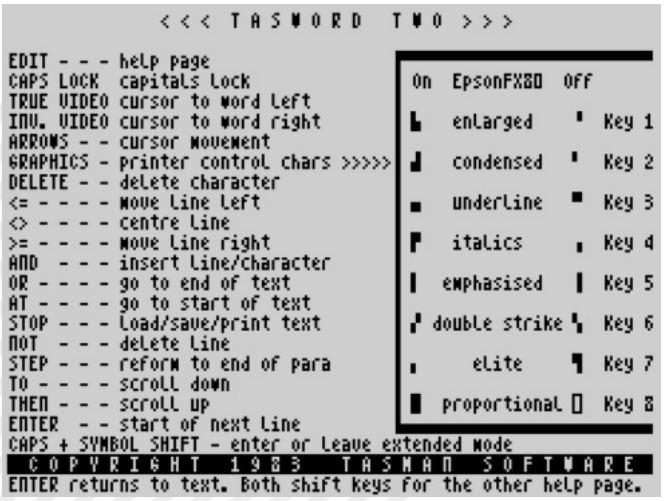
After trying the C64 version, I wanted to test also the original version for the ZX Spectrum. I found myself in front of an equally powerful and really well made software.

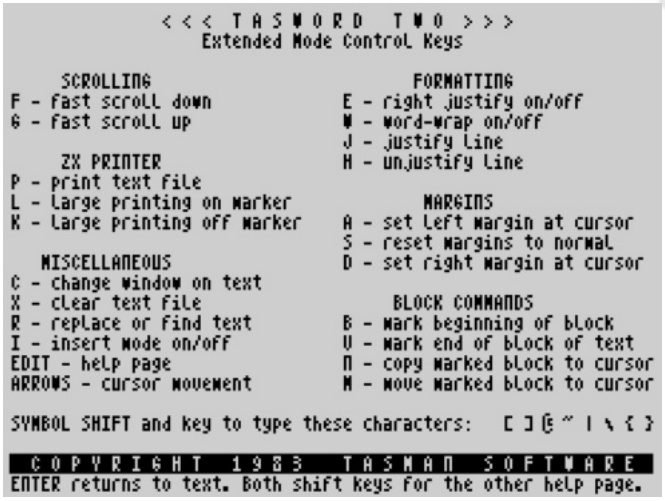
Also the online menu is well done; clear, readable and always at hand.

TS T A S W O R D 01
© Tasman Software 1982
EDIT ----- help page
CAPS LOCK- caps lock on/off
TRUE VIDEO normal characters
INV. VIDEO inverse characters
ARROWS --- cursor movement
GRAPHICS - graphics on/off
DELETE --- delete character
<= ------- move line left
<> ------- centre line
>= ------- move line right
AND ------ insert line/character
OR ------- goto end of file
AT ------- goto start of file
STOP ----- load/save text file
NOT ------ delete line
STEP ----- reform to end of para
TO ------- scroll down
THEN ----- scroll up
ENTER ---- start of next line
CAPS+SYMBOL SHIFT:extended mode
Press ENTER to return to text


TS T A S W O R D 01
© Tasman Software 1982
EXTENDED MODE CONTROL KEYS
EDIT - help page
ARROWS cursor movement
F ---- fast scroll down
G ---- fast scroll up
L ---- large printing ON marker
K ---- large printing OFF marker
J ---- justify line
H ---- unjustify line
W ---- word-wrap on / off
P ---- print text file
R ---- replace or find text
X ---- clear text file
SYMBOL SHIFT & KEY for [] © " | \ {}
CAPS+SYMBOL SHIFT:normal mode
Press ENTER to return to text

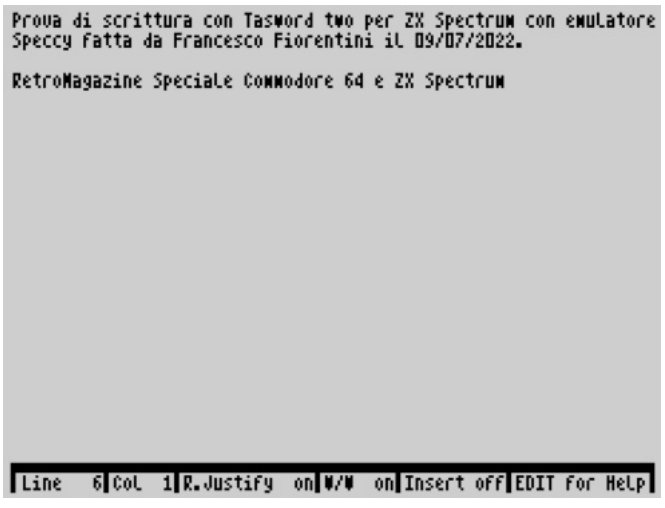
The version 2 of 1983, as already mentioned, manages very well the 64 columns on the 8 bit Sinclair screen.


<<< T A S W O R D T W O >>>
EDIT - - - help page
CAPS LOCK capitals Lock
TRUE VIDEO cursor to word left
INV. VIDEO cursor to word right
ARROWS - - cursor movement
GRAPHICS - printer control chars >>>>>
DELETE - - delete character
<= - - - - move line left
<> - - - - centre line
>= - - - - move line right
AND - - - insert line/character
OR - - - - go to end of text
AT - - - - go to start of text
STOP - - - load/save/print text
NOT - - - delete line
STEP - - - reform to end of para
TO - - - - scroll down
THEN - - - scroll up
ENTER - - start of next line
On EpsonFX80 Off
enLarged Key 1
condensed Key 2
underLine Key 3
italics Key 4
emphasised Key 5
double strike Key 6
eLite Key 7
proportional Key 8
CAPS + SYMBOL SHIFT - enter or Leave extended mode
COPYRIGHT 1983 TASMAN SOFTWARE
ENTER returns to text. Both shift keys for the other help page.


<<< T A S W O R D T W O >>>
Extended Mode Control Keys
SCROLLING
F - fast scroll down
G - fast scroll up
ZX PRINTER
P - print text file
L - large printing on marker
K - large printing off marker
MISCELLANEOUS
C - change window on text
X - clear text file
R - replace or find text
I - insert mode on/off
EDIT - help page
ARROWS - cursor movement
FORMATTING
E - right justify on/off
W - word-wrap on/off
J - justify line
H - unjustify line
MARGINS
A - set left margin at cursor
S - reset margins to normal
D - set right margin at cursor
BLOCK COMMANDS
B - mark beginning of block
U - mark end of block of text
C - copy marked block to cursor
M - move marked block to cursor
SYMBOL SHIFT and key to type these characters: [ ] @ ~ | \ { }
COPYRIGHT 1983 TASMAN SOFTWARE
ENTER returns to text. Both shift keys for the other help page.

If I was impressed by the speed with which the C64 changed fonts from 40 to 80 columns, I must admit that the switch from 32 to 64 columns (and vice versa) of the Spectrum is practically immediate!

Prova di scrittura con Tasword t
Speccy fatta da Francesco Fioren
RetroMagazine Speciale Commodore
Line 6 Col 1 R.Justify on W/W on Insert on EDIT for Help


Prova di scrittura con Tasword two per ZX Spectrum con emulatore
Speccy fatta da Francesco Fiorentini il 09/07/2022.
RetroMagazine Speciale Commodore 64 e ZX Spectrum
Line 6 Col 1 R.Justify on W/W on Insert off EDIT for Help

If you want to try Tasword for ZX Spectrum, I suggest **Tasword Two**.

You can find it on the **Word of Spectrum** website: https://worldofspectrum.org/archive/software/utilities/tasword-two-tasman-software

Have fun!

Interview with Leonard Tramiel

by Takahiro Yoshioka

Commodore and Atari legend Leonard Tramiel kindly gave us some of his free time to answer a few questions from our Takahiro.
Questions about his time at Commodore and Atari, some questions about his brilliant father, the Jaguar and much more.
It is a heartfelt read and done from the heart.
Enjoy.

Taka: What are your memories with early computers and do you remember the first ever video game you played?

LT: My first encounter with a computer that I could program was in the eighth grade. I took a programming class in school where we learned the simplified Assembly language and then Basic.
I suspect the first video game he played was Asteroids, but I'm not sure.

T: Your father was a survivor of the Holocaust. Do you think that experience helped make your father the man he was and really leave a mark on this world?

LT: My father was a complex man with many apparent contradictions. He was deeply affected by the deportation and that helped make him very tough, especially on the negotiating side. But few people know how he was really a very generous person and gave a lot of money to many causes. He had a fourth grade education and a deep distrust of higher education in general, but he recognized that the personal computer was highly educational and his push to make computers for everyone would greatly increase the number of computer literate students.
I didn't really have a personal passion for my father's work, but the opportunity to create something was too good to pass up and I had the opportunity to be involved in amazing things.

T: How did your father enter the computer industry and

is it true that the microchips your father used were used in a huge number of computers and consoles?

LT: Commodore started out as an office machine company and as the market demand increased, they started selling electronic calculators. When TI (Texas Instruments) entered the calculator market, the only way Commodore could stay in the market was to have its own chips. So MOS technology was purchased. One of the "princes" of MOS, Chuck Peddle, had a long term plan whose next step was to produce personal computers. He told my father that he was going to do it with Commodore. The 6502 wasn't my dad's "microchip," it was Chuck's. And yes, they were pretty much in everything. All the Apple, Atari, Commodore 8-bit computers used the 6502.

T: Your family name was synonymous with personal computers and helped shape the video game industry. What computer or technology you've worked on are you most proud of.

LT: Tough question. I don't think that way today and I didn't think that way at the time. What I'm most proud of is the fact that we always tried to make our products as inexpensive as possible. That's what had to leave the biggest impact.

T: Did you ever feel more pressure for your last name when you were working in the industry?

LT: The only time I've ever worked in technology was with

The Tramiel Family in the days of ATARI

my family. Working with family is undoubtedly an added pressure.

T: What did the name ATARI mean to you?

LT: Atari was the second best known brand in the world.

T: Let's go back to Commodore. What was your role within it?

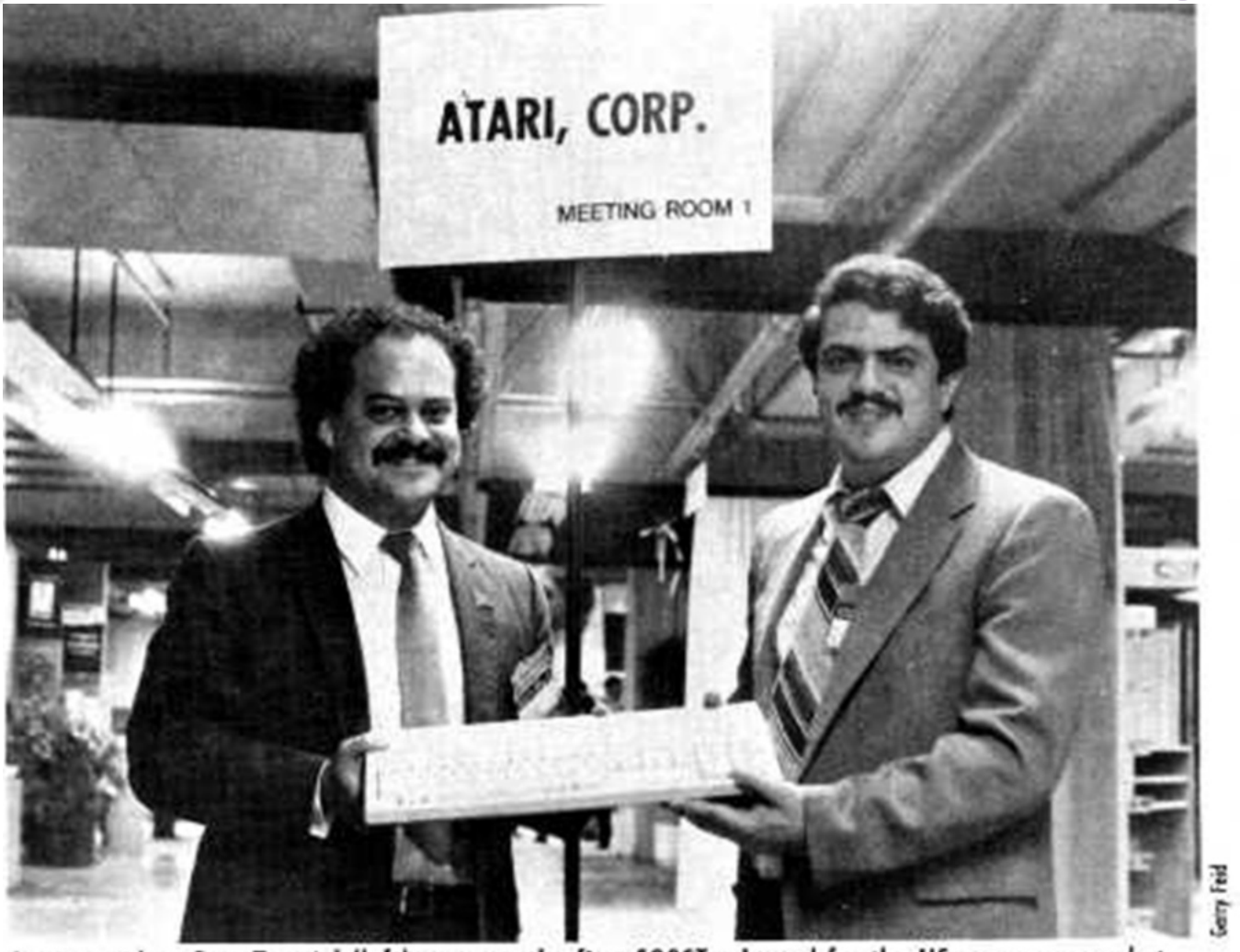
LT: I've had several roles in Commodore. I started in the warehouse (my father wanted me to start at the bottom). I repaired calculators, wrote firmware for some models of these calculators, and was an engineer for a liquid crystal manufacturing plant. I also worked as a "handyman" for trade shows where we participated as exhibitors. I was part of the development team for the Commodore PET. My main contribution on the PET was the design of the graphic character set.

T: What do you think about the Commodore 64?

LT: Perfect machine for the perfect moment. Carefully crafted at every point. Low cost for the capabilities, a lot of memory, great graphics, the SID. Maybe the Basic needed more care but we can overlook it.
It was a success on every point. The development team was born with the idea of conquering the industry and they succeeded. In fact, the C64 faced a wide range of competing machines upon its release. Here in the States it was the Atari 800 and the Apple II. In the UK it had competition from Sinclair's ZX and Amstrad's CPC.
Wiped out by aggressive marketing and biblical software availability. It could compete with more serious computers and gaming consoles. Unmatched.

T: At Atari you worked on numerous projects. The Atari ST was a huge success and the real competition to Commodore's Amiga.

LT: I think the ST was an important machine for the second generation of home computers. It was the first machine with enough resolution to do serious tasks like word processing, and it used an innovative GUI for the time with a price that was affordable. Plus it was a great machine for sound.
A console version was discussed to counter Sega or Nintendo, but the cost was just too high.



Atari president Sam Tramiel (left) presents the first 520ST released for the US consumer market to ChicagoLand Atari Users Group president Peter Pacione at the June 1985 Consumer Electronics Show.

T: Speaking of consoles. You worked on Atari's phantom Panther console, a project that was shelved and then moved to make the Jaguar. Tell us a little bit about this period.

LT: I really did a lot of work on the Panther. I wrote a graphical development environment that allowed you to work on a ST and then port it to the console. A cheap but very high performance development kit. The system on ST produced the code and you could download it to the console. Panther was supposed to come out before the Jaguar but encountered numerous design problems that slowed down its final development. When the Jaguar was proposed, the Panther console was slowly sidelined and then abandoned.

T: We're almost at the end. Thank you for your precious minutes. If you could go back in time, what would you have liked to do differently.

LT: I never thought about it before. I would certainly convince my father to close ranks to keep Commodore. I would have brought in some brilliant developers who later migrated to other groups. I would have wanted to work on an 8-bit successor to the C64. But those are dreams.

T: Are you still working in the industry?

LT: No I am retired, but I am dedicated to improving science literacy.

T: Thank you for this interview.

LT: Thank you to you at RMW. Regards.

Interview with Gregory Nacu, author of C64 OS

by Carlo Nithaiah Del Mar Pirazzini

The 40 years of the C64 are untamed and numerous developers are trying their hand at new hardware, games and programs.

The development of this operating system promises to be very interesting.

We caught up with Gregory Nacu, the author of the C64OS project, to ask him a few questions about it.

Nith: Thanks for the interview and for your time. Tell us a little bit about who you are and how your love for programming and the Commodore 64 came about.

You're welcome. Thanks for having me.

I was born in 1981. I was very young when the Commodore 64 came out. My uncle bought a VIC-20 for his parents, and I have a vague memory of my cousin and brother playing it when we visited my grandparents. Fortunately for me, the VIC-20 broke and my grandparents had no interest in it, so they gave it to my parents as a gift.

When I was maybe 5 or 6 I found it under my bed, pulled it out and plugged it in. I was intrigued and begged my parents to get it fixed. They got it repaired, and if I remember correctly, it cost $40.

I would plug the VIC-20 into a small 12 inch black and white television. My first programming idea was a top-down hockey game. I drew PETSCII graphics on the screen, but was rather disappointed because my game didn't "work". I remember explaining to my sister that I had drawn the way I wanted it to be, but I didn't understand why nothing else happened than what I had imagined. :)

I had no idea there was a program to bring the game to life. Over the next few years I learned to program in BASIC, but only at a rudimentary level, mostly following the examples in the user's manual. I had very little access to software. Two games on cartridge and a few saved games on tape that had been typed up from magazine listings. However, I loved my VIC-20. I had an old issue of Computer's Gazette, which featured the Commodore 64. I knew the C64 was much more powerful, but I didn't own one!

Fig. 1 - The slogan of the C64 OS project

When I was 9 years old, around 1990, my parents bought a second-hand C64c, which came with a 1541-II, an Epyx Fastload cartridge, a user manual, and a box with maybe 50 disks. The discs were full of cracked games and some demos, as well as some commercial releases, including GEOS 1.2 and 1.3 discs and some LoadStar issues. From then on I became completely obsessed with the C64, which I spent almost all my time with over the next 10 years.

N: The idea of developing a new OPERATING SYSTEM for the C64 is appealing. Were you inspired by anything? What did you start from?

G: I loved GEOS. It was clearly very different from the normal READY prompt on the C64. I could tell there was a lot of thought and structure in it, and a lot of clever features. I loved the way the different parts worked together to create something rich and powerful. GEOS was my first experience of a real operating system and I was hooked.

Eventually my parents got a 486 PC, with Windows 3.1. I really liked Windows 3.1 and learned how it worked. With that PC I got online for the first time and that led me to discover the Commodore community in general.

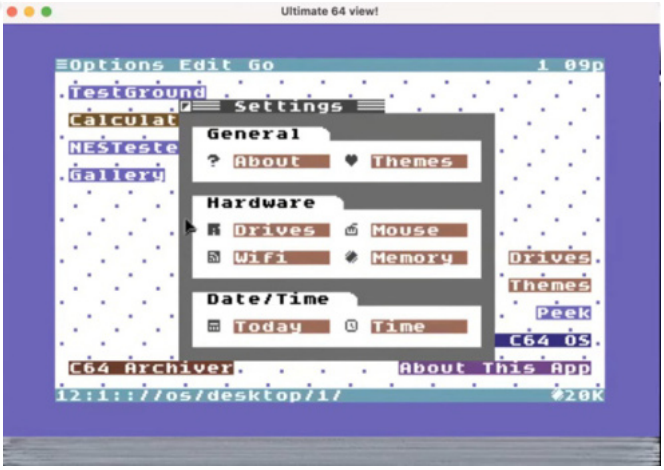


Fig. 2 - Screenhot of the settings within the C64OS

Commodore itself was already bankrupt, but Creative Micro Designs was active and selling amazing expansions for the C64 and C128. Instead of buying a PC, I started spending my money on devices to expand my C64, and by that time I had also bought a C128. I got a Turbo232 and a high speed modem, a hard drive, a RamLink and a REU. I started going to BBS's and using a dialup shell account to access the Internet. I met a bunch of cool people on the C64 IRC channels and eventually became an honorary member of DAC (Digital Audio Concepts) even though I still knew nothing about programming.

I got myself a SuperCPU and an IDE64, and started going to shows in the US. I bought copies of Wheels 64 and Wheels 128, GEOS improvements. And I used them for all my schoolwork throughout high school. When I started college, I realized that despite my love for the C64/128, I needed a more modern computer. So I got an iMac. I had approached the Mac with a Performa running Mac OS 8.6 a couple of years earlier. The iMac had Mac OS 9 and I loved finding out how it worked.

Then I learned that Australian Jolse Maginnis was working on a multitasking operating system for SuperCPU called JOS (later renamed WiNGs). At first I became a beta tester, then helped him debug the hardware I had, sending him the results from a monitor on IRC. I wanted to learn how to program for WiNGs. WiNGs had a C cross compiler, so with Jolz's generous help, I learned to program in C. And I produced several tools and applications for WiNGs. Something I liked, and I managed to write some pretty sophisticated stuff: an email client and address book, a movie player, a file manager, and a painting program called SpiffyPaint that I never finished.

In the early 2000's the Commodore scene hit rock bottom. Creative Micro Designs abandoned the 8-bit world. A few things happened with the guy who had bought the rights to produce the SuperCPU and the CMD HD, and the SuperCPU went out of production. Without the SuperCPU, and with so few people having one, the future of WiNGs was very dark. Then, unfortunately, Jolz went out of business and stopped developing WiNGs. I stuck it out for a while longer, but I too left the scene. I thought the C64 had run its course and the fun was finally over.

I got married, had a couple of kids, and we bought a house. During several moves, I kept all my Commodore machines (except some CRTs, which I now regret giving away).

In 2016, for reasons unknown, I became interested in the world of the C64 again. I was amazed at how much activity there was in the community. Much more than there was when I had left 8 years earlier.

My mind immediately went back to the C64 and operating systems, and what I could develop. I decided a few things right away: I would learn to code in assembly 6502. I wanted to develop natively on the C64. I also decided that I did not want to depend on the SuperCPU. I wanted to create a system that could run and feel fast and useful at 1MHz and 64K memory.

I was inspired by the iPhone and the Apple Watch. Both, at the time, had small, low-resolution screens and limited memory and CPU resources, compared to contemporary desktops. The fact that the iPhone only ran one app at a time and the apps were always full screen was a big inspiration for me. Another big inspiration was the spread of web services and cloud computing. It no longer seemed like cheating to use a web service to deliver data to a C64 in an easy to consume format.

From there, I started learning the 6502, studying how the C64 works, learning its various features and developing as I went. I had some general plans, but many of the details were figured out along the way. I created C64os.com and started blogging about my progress and what I was learning about the C64.

Fig. 3 - An example of Desktop

N: Wow! Do you want to tell us how the C64 operating system will be developed?

G: I use Turbo Macro Pro on a C128 in mode 64, with a 2 MB REU and a CMD HD, for all development. I use a Mac to draw icons, which I then manually transcribe to paper and binary data. I use the Mac to write a blog, but my long term goal is to be able to use C64 OS itself to manage and update my blog.

I have copious design notes and diagrams on paper. A binder full of API documentation for low-level stuff like KERNAL, drivers and libraries, another binder full of design documentation and APIs for all the Toolkit classes. And a third binder full of design diagrams and notes for application user interfaces and utilities.

Turbo Macro Pro has a limited ability to assemble large objects. I found that a single source code file cannot exceed 2000 lines of code, with comments and about 25 includes for headers, constants, class definitions, etc. These limitations forced the C64 OS design to be radically modular. They also inspired me to invent solutions for code relocation, dynamic searches, static linking, and also to write a bunch of tools that help in these development processes.

The result is that the entire system can be programmed, updated, debugged, assembled, linked, relinked, etc., all from a C64. It was a challenge to get it done, but I'm quite proud of the result. Some discussions now are about how to migrate headers and development resources so that other people can do cross development. This is a solvable problem, but if everything had been developed on a PC first and then we wanted to migrate the development to the C64, it would probably be impossible.

N: What will it contain and how will it be brought to market?

G: The main system, version 1.0, consists of an organized tree of subdirectories contained within a single root-level system subdirectory, plus a root-level boot program. The system directory has subdirectories for the KERNAL, library, drivers, toolkit, applications, utilities, settings, and a few others. The KERNAL consists of 10 modules, with routines that augment the KERNAL ROM, including: file management, pointer and keyboard input, common math and string routines, dynamic memory allocation, menu system, screen composition and low-level contextual drawing, services, timer, and toolkit environment. The toolkit consists of about 20 user interface classes, about 8 of which are always resident in memory, while the others are loaded at runtime when they are needed. There are about 12 drivers of 3 different types. There are about 17 or 18 shared libraries and about 6 low-level components, for exception handling. There are 8 applications, some of which are just demos, but also include the App Launcher and File Manager. Along with the applications there are over 20 Utilities, which are like small applications that can run alongside the main application and provide support services to it.

But above all, C64 OS consists of a well thought out and complete environment that is fun and easy to use and easily expandable. New Applications and Utilities can be written relatively quickly. And it is easy to write new libraries, drivers and toolkit classes that can be reused and incorporated into other new applications and utilities to greatly reduce their development effort.

N: Here in Italy we can't wait to get our hands on your product. Any forecasts for its release?

G: I have officially announced on Twitter, C64OS.com and via other media, that a commercial release of C64 OS version 1.0 is planned for availability this summer. So, let's say before September 2022. You will be able to

Fig. 4 - Embedded within the OS is the viewer to display the most common image file formats

purchase a physical copy of C64 OS directly from C64os.com. I still have a lot of loose ends to tie up. And with such a complex system, there are bound to be some issues that come up after release. But I'll be more than happy to work on any bugs and compatibility fixes soon after.

Ultimately, C64 OS is a product that I wanted to create for myself, because I want to use my C64 as much as possible. I want to write applications and utilities that allow me to use my C64 to perform as many tasks as possible in my daily life. I consider myself just part of the journey of the many things I want to use C64 OS for. But ever since I started talking about C64 OS and giving demonstrations of my progress, people have asked me, "How can I get a copy of this?" I had two goals I wanted to accomplish before making a version available to the general public.

The first is that the main core needed to be completed and needed to be relatively stable. To that end, I wrote a lot of utilities and some applications that exploit pretty much everything. These things put the API to the test, and the shortcomings I discovered led to major changes along the way.

Second, I wanted C64 OS to be useful to people, rather than just being a great demonstration of technology. The File Manager is the main feature of C64 OS as a useful product for other people. It has support for all major types of storage devices, it is fast and feature rich, you can have up to 4 places open at the same time in 4 different tabs. It can move files and subdirectories recursively, copy and move files and subdirectories recursively between any two locations (partitions and subdirectories) on any two devices. It has rich keyboard and mouse control to navigate file systems and make selections. It is integrated with the universal clipboard. The user interface is flexible and based on the object-oriented Toolkit. It has customizable options to jump from place to place, add places to favorites and remember recently opened files. It can be used to open Utilities and launch C64 OS applications, and also to launch regular C64 software via PRG aliases. And it can be used to open documents and data files in Utilities and Applications.

The File Manager is what makes C64 OS a great tool for regular users. C64 OS is much more than that though, and I'm super excited about the Applications that will be built on top of it. Version 1.0 is the first time that people in the wider community will be able to dive into C64 OS. With a copy of version 1.0, users of C64 OS will be able to download new libraries, drivers, utilities and applications, as they become available, to add to their system. And hopefully people will be interested in learning how to develop for C64 OS.

N: Would it be great for the 40th birthday of the C64 right in August?

G: I haven't planned things that way, but it's a very convenient time! We'll see.

We thank Gregory for his time and work and remind you that you can visit the C64OS blog directly at this address: http://c64os.com/

My own story

by Gianluca Girelli

Hello, Gianluca Girelli here. I am one of those people who were already out there when everything in the gaming industry started and, as many others, I own a fairly decent collection of retro hardware that stayed "silent" in my basement for way too many years. Now, on the verge of 53, most of this hardware is at work again and, as you will learn in a minute, it is here to stay.

Let's start from the beginning, though.

When I was a kid, computers where not actually present in everyday's life, but you could see them everyday on TV or in movies. The first significant memory I have of them is the big mainframe in "Space 1999" TV show, a British/Italian co-production that made me decide two things: 1. I wanted to be a pilot (an astronaut was daring too much); 2. I wanted to learn how to code.
At that time I was only 6 years old, so you may expect those ideas to fade away once I grew up, but they didn't. Despite life didn't make a professional coder out of me, computers indeed are a big part of my everyday's life.

I was there when Asteroid came out in arcades, and I was there when black-and-white turned into colors with Donkey Kong. I was there when my friends got their Commodore Vic20s, their Sinclair Spectrums or their first 8088-based PCs. My parents were struggling too much to make ends meet (we were a family of six, working in the shoes businnes and, in the early 80ies, that industry was crumbling into pieces), so they could never afford to buy me a computer. I dreamt of a computer every night, crying because I could not have one; it was not a matter of not owning something my friends had: it was because they only used their computers to play, while I literally wanted to hack those system, even before knowing what "hacking" meant. Back in the days, bookstores and magazine shops where full of products that taught you how to code, together with insights of the Operating System of your choice: definitely a Stargate to a new universe to me.

At a certaing point, after a long summer spent working 9 hours a day, I bought my first computer: I was 16 years old. The first-ever Amiga was already out, but it was still too expensive to get close to it, so I reverted on a Commodore 128, a machine that I coded every single day for the following 3 years. I was attending a computer science school, so my "desire number 2" was quickly becoming a reality.

At the same time, my friends did basically abandon their computers, moving on to consoles like the Super Nintendo. With its 16-bits chips and endless choice of colors (for the time), it boosted my imagination even more. Yet, I didn't want to play: rather, I wanted to code games.

The high school made use of Apple IIs, Olivetti M24s and M28s; on those machines we mostly coded using Borland's Turbo Pascal compilers and, sometimes, we also used Assembly or LOGO languages. With its complex data structures and strict sintax rules, Pascal was a true educational experience that shaped my way of analizing problems and writing clear and (possibly) simple code, totally different from the BASIC I was using at home. In order not to lose the progresses I was making at school, I started to write my BASIC programs using the same concepts behind Pascal: this behavious, coupled with the

CP/M mode of the C128 and the availability of a Pascal compiler on the C64, did the rest.

I was actually living two lives: while people where starting their console/home computer wars to decide which platform was the best, I was getting the best from everyone of them: complex coding with the BASIC 7.0 of the C128 and awesome games by entering the C64 mode. It was only many years later that I put my hands on a real C64 hardware (I had previously used the C64 enviroment a lot, even though only with the C64-mode of the C128), but that blue screen that is so familiar to millions of people is also well present in my memories and in my heart nonetheless.

Due to a million of different reasons, I didn't have almost anything to do with computing and/or gaming until the end of '97, when I got my first console: the magnificient Grey Goddess, the PlayStation 1.
Everything started to come back again, although very slowly. I got back to computing, which obviously had moved on a lot so, at start, I did struggle to fill in the gaps and to get back on track.
Eventually I did, posing also the basis for something that, as said, I always wanted to do: game coding.

It is thanks to all the experiences I made through the years that I was finally able to code, produce and sell two professional games, the first one in 2015 and the second one in 2021. Both were made using an Amiga-based framework and are available for next gen-Amigas and other modern OSs (Win, Mac, Linux). Yet, my thirst for 8-bit coding was not quenched and drew me back to our beloved retro systems.

I started to code homebrew tool to be used in my future projects, and one of them gave birth to another product, this time an educational tool to learn the basics of Japanese language. Since the software was meant to make use of a wider (80 columns) screen, it was C128-oriented from ground up yet, needing to use programmable characters, its prototype was tested even on the C64. This aproach

gave me the opportunity to tinker both with my first love, the C128, and on Commodore's masterpiece, the C64. When you have the opportunity to catch two birds with a stone ....

This special issue of RetroMagazineWorls was born from the idea of celebrating the first 40 years of the C64 but, as you have now learned, there is much more than meets the eye here, and the "breadbin" did so much more than simply attracting videogamers to it.
The C64 was not my original platform of choice, but now I am actually and activelly developing also on it. In the end, it doesn't really matter what you do; what matters is loving it, and striving to give your best every day you have the luck to live.

Long live the C64!

Modern-day C64 and Spectrum

by Daniele Brahimi

Being in the new millennium with hundreds of distractions and cutting-edge technology it's not so easy to think or rethink about the home computers of the 80/90s even if we all have owned at least one. Especially in front of today's games and consoles that offer video gaming fun that can last for months for each title, thanks also to the rich challenges they offer online, with users connected from all over the world.

But those of you who, like me and many others, have spent a few minutes with one or more of the home computers of that era, realize that they have always been a part of us and are impossible to forget.

But what if we want to dust them off to replay the best games? Or finish games left halfway through due to inhuman difficulty?

Who like me had made the serious mistake of selling them to move to new generation machines, or was forced to discard them because they were no longer giving signs of life, well we are in a completely new and revolutionary millennium from all points of view. The solutions are not lacking and I think that these machines are now immortal.

On the net there are several sellers offering complete solutions. Some of them at mind-boggling figures, others with more affordable prices as the retro passion grows by the day.

As you can well see, the groups and communities are full of users posting pictures of their old jewels dusted off from the cellars, recently bought or found in the trash working!

For those who instead want convenience and immediacy, there are emulators for Commodore 64, ZX Spectrum and many others. For the first one there are Vice and Frodo, in my opinion the most practical and easy to use, while for the second one I suggest Fuse, also comfortable.

On the net you can find almost all the "roms" of the games released at the time, including the newsstand tapes. So you can easily replay all the games and in particular those that you had not completed or those that you did not own, given the prices and pocket money we had. Did you think everything would end here? Or to rewrite a piece of history with the melancholy of the good old days?

No, they're not. They're producing new titles right now! In 2022! Sure, not with the same cadence as then, let's be clear, but they are producing them and some of them are really worthy of note as Age of Heroes, Abbaye du morts, Demon run...

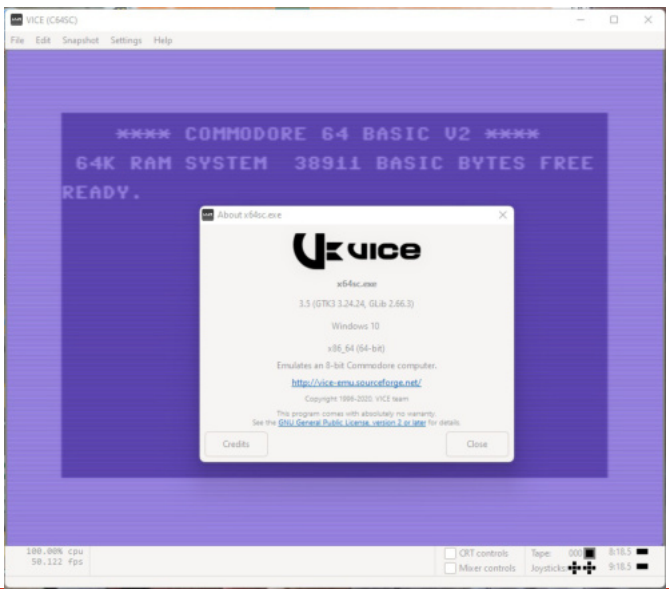
If you don't want to neglect the old titles, I warmly recommend Turrican, I'm playing it in this period, Bubble Bobble and Turbo Out run (the list would be endless) titles and conversions that exploited well the technical features of the Commodore 64.

Also the ZX Spectrum, even if with monochrome graphics and playability sometimes not so good, had some very good titles that even outclassed the Commodore 64, for example Chase H.Q. and Super Hang On.

On the net, in addition to emulators you will also find tutorials on how to use them, configure and run the rom, as well as various gameplay and always tutorials on youtube in the various Italian and foreign channels.

I don't need to tell you how many channels exist on retro passion. Ah I forgot to tell you an important thing: there is a cartridge where you can put the "rom" and insert it in the back of your old home computer to replay the titles with immediate loading, without having to wait the biblical times of the recorder. You can find it for sale on the net too; the one I recommend is the Kung Fu Flash.

Enjoy this special issue in pleasant company, i.e. with a Commodore 64 or a ZX Spectrum, or both (emulating doesn't cost anything...)!



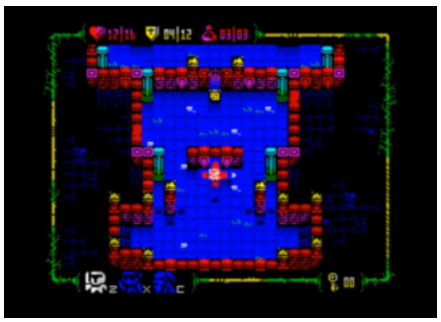
NEW GAME

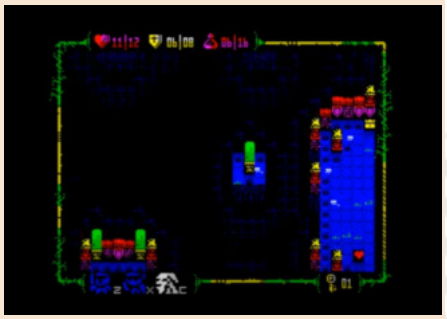
TINY DUNGEON

Year: 2022
Editor: Retrosouls
Genre: Roguelike
System: ZX Spectrum 128
Website: https://retrosouls.itch.io/tiny-dungeons

A terrible necromancer holds the land of twilight in his grip. Three brave heroes venture into the terrible abandoned crypts with the aim of putting an end to his evil deeds.
For the 40th anniversary of Sir Clive's computer there could not have been a better present. Tiny Dungeon is a real gem.
Excellent graphics with a well used Spectrum color palette. Well structured levels with increasing difficulty.
They don't make games like this, and they didn't make them at the time either.
Full of enemies to defeat, items to collect, lots of areas to fight in and all in our 128k with a fantastic soundtrack.
There is little more to add to this, only that I urge you to support Retrosouls. These guys are the future of independent games on beloved retro platforms.

by **Carlo Nithaiah Del Mar Pirazzini**





OUR FINAL SCORE

» Gameplay 95%
Simple and straightforward. Compelling gameplay and well-calibrated difficulty curve.

» Longevity 80%
Addictive! It's hard to stop playing this game.

NEW GAME

GOLD QUEST 6

EXTENDED EDITION

Year: 2022
Editor: Richard Bayliss, Sledgie
Genre: Dungeon Crawler
Platform: Commodore 64

Website: https://csdb.dk/release/?id=218974

GOLD QUEST 6
EXTENDED EDITION
HEX OF THE 7 DRAGONS
FULGORE, THE ORC SHAMAN, KEEPS SLEDGIE LOCKED IN HIS DUNGEON, GUARDED BY 7 LOYAL DRAGONS.
DESCEND BOLDLY, DEFEAT FULGORE AND HIS MINIONS. FREE SLEDGIE!
STRIKE A KEY
AND LET YOUR QUEST BEGIN!

The Gold Quest saga saw the light on C64 in 2005. Initially it was an ARPG saga with a top-down view and with a dwarf named Sledgie as the main character.
Gold and gem miner in an enchanted land. A fast-paced and rather dynamic game that had numerous sequels all featuring good gameplay and a touch of healthy humor.
The series has been made for years using the famous SEUCK, the Shoot em up construction kit.
This sixth chapter is a game changer.

SEUCK has been abandoned to make room for programming in BASIC V2 and PETSCII graphics. This choice lent itself best to making a Dungeon Crawler in pure Dungeon Master style.
The protagonist has changed. The legendary and courageous dwarf Sledgie, always on the lookout for gold and precious gems, is this time a prisoner inside the deep dwarven kingdom of Roglia and its dark caverns.
He knows very well that within these labyrinthine corridors are tons of gold, gems and valuables, but he also knows that this place is crawling with green-skinned enemies, the hungry Orcs of Traublonia, bitter enemies of the dwarves. These baddies have kidnapped him, and it's up to us players to rescue him.
The player will be leading the dwarf member of the elite guard and will be tasked with retrieving Sledgie and freeing the mines.

At the beginning of the game you can create your character and choose your representative class from four different classes:
Adventurer: Skilled swordsman
Tightwad: more like a burglar
Zechpreller: a strange mix between a druid and a wizard
Warrior: the word says it all.

The dungeon is full of treasures and magical items but also of monsters, non-player characters who will give us information and ... lots of traps!
It is also possible to station at some taverns to refresh and recover.
In its simplicity Gold Quest 6 is an intriguing title. Graphically minimalist but nice, good gameplay and interesting puzzles.
It quickly becomes enjoyable to explore mines, fight orcs and recover treasures.
The 12 main missions provide a good amount of hours of gameplay and will keep you busy.
A nice surprise among the titles being released around this time.

by **Carlo Nithaiah Del Mar Pirazzini**

OUR FINAL SCORE

» Gameplay 90%
A nice dungeon crawler with all the typical things of role-playing games

» Longevity 85%
12 quests and lots of exploration

NEW GAME

RUBINHO CUCARACHA

Year: 2022
Editor: Zosya Entertainment
Genre: Driving game
System: ZX Spectrum
Website: https://www.zosya.net/2022/03/21/new-game-rubinho-cucaracha/

Desperate driver Rubinho Cucaracha is competing against a dozen crazy rivals for the European championship. The programming skills on ZX by Zosya Entertainment are unique. This Rubinho Cucharacha is another example of making the most of technical capabilities on 40 year old machines.

We had already seen it in Travel Through Time and other titles and we can only confirm it with this one as well.

The graphics level is incredibly detailed and everything moves fast.

Minimal sound but well done.

The game's lighthearted style reminiscent of the old world of Hanna Barbera's Wacky Races serves as the glue to good gameplay and an easy learning curve.

It's not the hardest title in the world, in fact it's completed in no time but it's fun and makes you smile.

A good game.

by **Carlo Nithaiah Del Mar Pirazzini**

OUR FINAL SCORE

» Gameplay 85%
Simple and well-developed.

» Longevity 80%
It's not super long but it's fun and every now and then you'll play it.

LYKIA
THE LOST ISLAND

Year: 2022
Editor: Stefan Mader team
Genre: Action RPG
Platform: Commodore 64/Plus 4
Reviewed: Commodore 64

The development team led by friend Stefan Mader really loves the work they do. Lykia is a great example of programming and passion mixed with genre knowledge.

It all begins with young Nora waking up in her bed. It's her 16th birthday but it's also the day that will change her life!

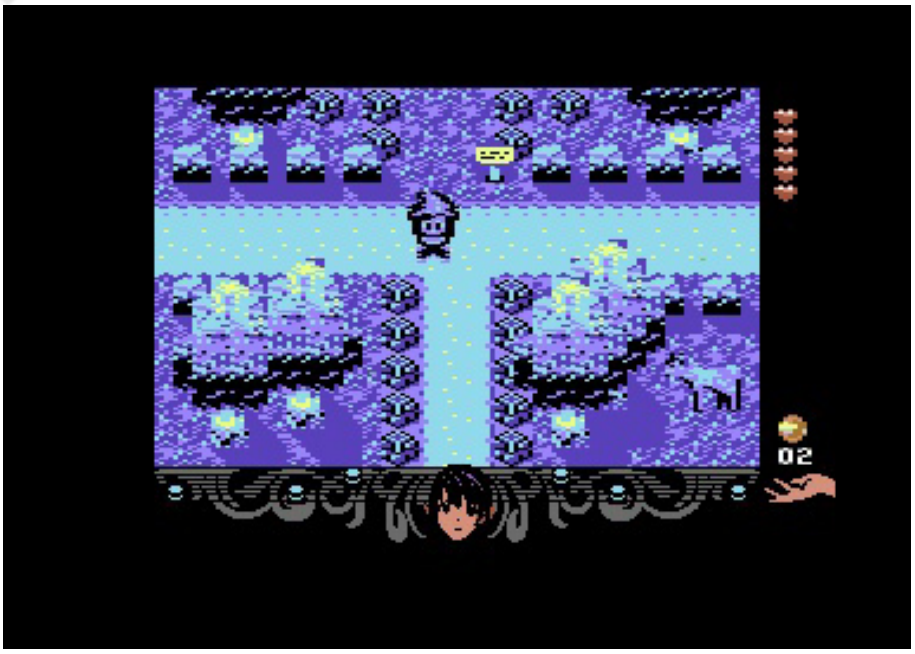
She will find herself in the midst of an adventure that will begin with gathering apothia fruit and then develop into a world affected by magic and an ancient spell that has affected and petrified animals and people.
But Nora has special powers and the courage of a lion.

Lykia starts out like the most classic of this genre of games and does so with great style. It's reminiscent of The Legend of Zelda a Link to the Past. It is a beautiful fairy tale with an engaging narrative parta and good gameplay that will make us explore the world between cities, forests and dungeons.

The game was made by Stefan Mader and his team, former creators of Pets Rescue and Alpharay. We have a remarkable attention to detail.

The Plus 4 version is remarkable (we'll talk about it in RMW issue 38) but this C64 version is a precious gem.

This genre of titles on the breadbin is having a second youth. After Briley we have a dynamic and immersive



OUR FINAL SCORE

» Gameplay 90%
Simple and user-friendly system. Well-calibrated difficulty.

» Longevity 90%
Several hours of play will keep you busy in front of your Commodore 64.

title that will keep us glued to the monitor for several hours.

The story develops well and, in this final version (which Mader sent us just a few days ago) fixes some issues present in the May release. If before we had some dead spots in the game and the feeling of scattering, now the plot allows us to continue properly and no dead spots are present.

The fights are fair and never too punishing, though perhaps not very varied.

Graphically this C64 version loses in colors but gains in speed. The world is varied and everything is well delineated. The SID on the other hand is pulled together. Soundtrack by Markus Jentsch optimal and very good sound effects.

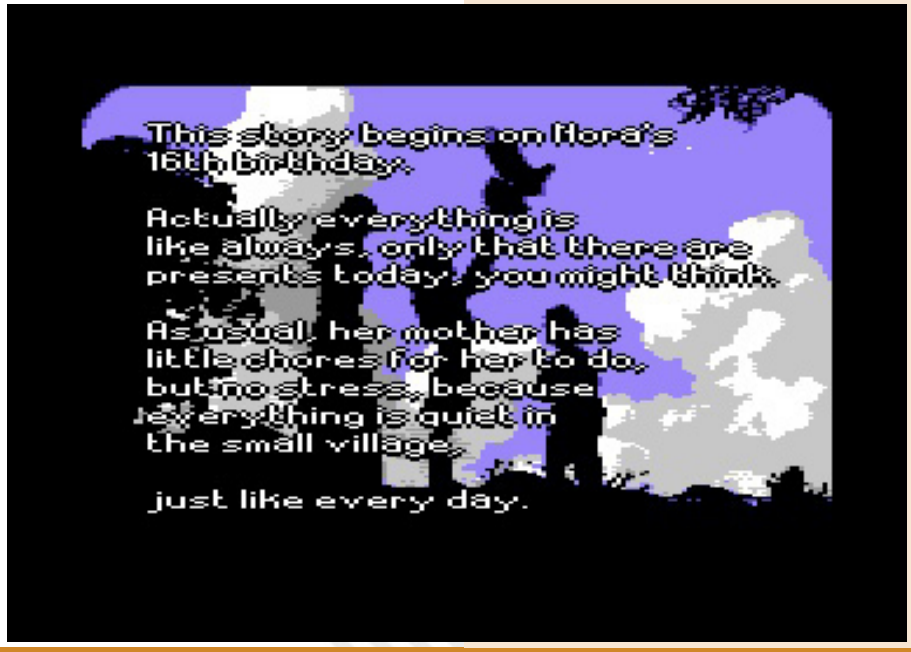
The game is digitally distributed in several formats (D64, D81) and runs perfectly on THEC64 family, emulators and also on real hardware.

Next will be the physical version (cartridge with manuals and numerous gadgets) available from Psytronik and Protovision.

We can only recommend Lykia the lost island, one of the best titles of this 2022.

by **Carlo Nithaiah Del Mar Pirazzini**

Website: http://www.psytronik.net/newsite/index.php/c64/140-lykia64


This story begins on Nora's 16th birthday.
Actually everything is like always, only that there are presents today, you might think.
As usual, her mother has little chores for her to do, but no stress, because everything is quiet in the small village,
just like every day.

Manic Miner

by Christian Miglio

Welcome back friends of Retromagazine World, your Elder to celebrate the first 40 years of the Biscuit dives into the memories and pulls out the first game ever loaded on his Commodore 64 or Manic Miner!

Amarcord: the Magical Caverns!

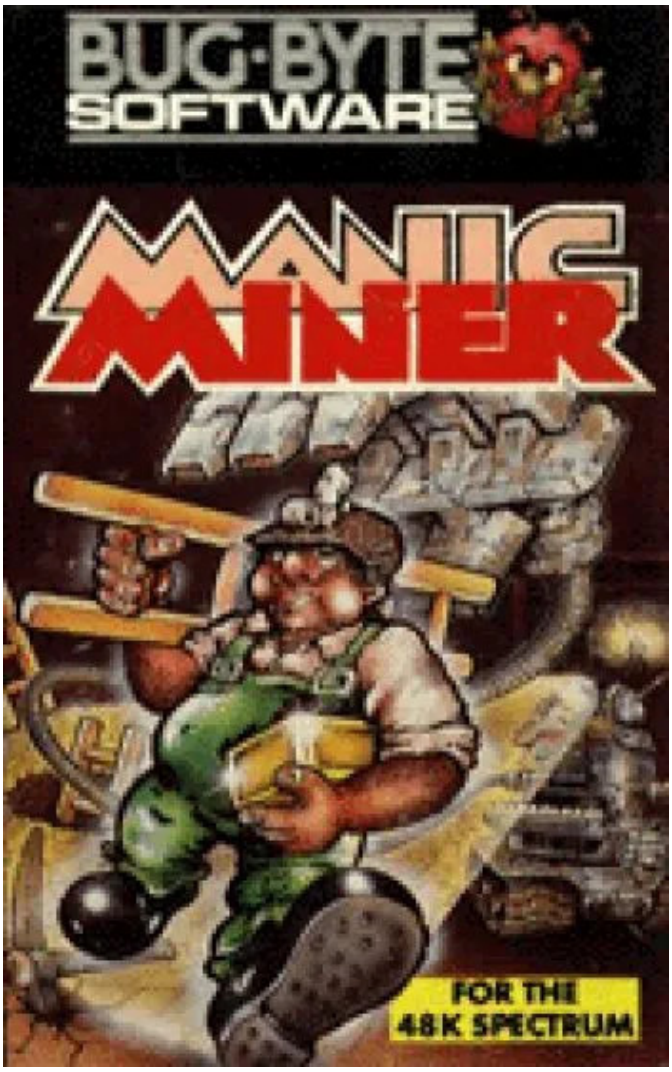
Those were the years when in Italy two important home-computers were competing for the videogames market, Lord Sinclair's ZX Spectrum and our beloved Commodore 64!
I well remember the very first time I saw Manic Miner, it was 1984, at the Città Mercato supermarket in Rivoli (TO). That day, together with my Commodore 64, came home with us two beautiful cassettes signed Mastertronic. The first one called "The magic caves" and the second one called "Gugù the prehistoric man".
As chance would have it, the first cassette to be "eaten" by the Datassette was "The Magical Caverns", or Manic Miner!

Manic Miner: a bit of history

Manic Miner is a great little platform game originally released for the ZX Spectrum by Matthew Smith and published by Bug-Byte in 1983.
It was released for several platforms including ZX Spectrum, Commodore Plus 4, MSX, Amiga and Commodore 64.
The last one is the version I personally prefer. Later the game was re-released under the Software Projects label. It was a fast loading game, an exceptional process for its time.

The first one dedicated to Miner Willy

This is the first game in the series dedicated to Miner Willy, consisting of two other titles: Jet Set Willy and Jet Set Willy II.



Manic Miner encapsulates the essence of the typical platformer video games of the mid-eighties.
No scrolling (fixed screen), graphics and sound reduced to a minimum, an authentic concentrate of playability capable of raising the concentration and tension of the player to a thousand.
This is mainly due to the inability to miss more than the three lives made available.

Manic Miner, gameplay

The basic gameplay is easy to describe. You play Miner Willy, who has stumbled into some underground caves. Your task is to collect the treasures and then escape. The cave complex is divided into twenty individual screens, each of which contains a number of treasures.
Willy can only move on to the next cave when he has collected them all.

Obstacles and dangers everywhere

Unfortunately, the caves are guarded by monsters and bushes, apparently poisonous.

In fact anything that is not the ground, or a piece of treasure, is deadly.

Willy also has a limited air supply in each cave and cannot fall for great heights.

Game Controls

The controls are very simple, you can only direct left , right and jump.

Being a 1983 game, Willy can't be driven while in the air, and so the player has to make sure they really want to jump, because there's no turning back once Willy is in the air.

It's crazy to get to the last level

Three lives for twenty interminable caves to get through (I personally never made it past the seventh cave).

Strictly limited time, millimetric jumps and actions to be performed sequentially practically without thinking.

One must let one's hands keep Miner Willy going and not one's head, which is susceptible to external disturbances that could be fatal to our enterprise.

A folly to get to the last level, I do not know that anyone has ever managed, at least without "cheat", then you get older, go on the tube and discover the videos of the longplay where players from the handle of steel and the reflexes of a puma, finish it with eyes closed.

Curiosity about Manic Miner

After publishing the game for Bug Byte, the good Smith switched to Software Projects and had his protégé re-released for this label.

There are also substantial differences in the graphics of the "monsters" from the two versions.

One of the monsters will in fact become the logo in the first version of the game! Then you can type in the number 6031769 to activate a real cheat mode.

Apparently that number was Matthew Smith's phone number at the time of writing the game and the current owner of the number is fed up with calls still coming in to the house asking for him, the author of the great Manic Miner!

Subtle differences

One of the main differences between the original Bug-Byte version (left) and the re-issued version by Software Projects (right). Some of the monsters are represented as Penrose triangles, figures adopted as logo by Software Projects.

Almost forgot: apparently Manic Miner was the first video game to have an animated loading screen. It was the word MANIC alternating with MINER in the ZX version. It was also among the first to have accompanying music during the game. It was a success, appreciated by critics also for its difficulty, both in terms of reflexes and strategy required, and it was officially converted for many other platforms.

The caves of Manic Miner

After listening to the entire opening theme song, you can set off on a playable "tour", which includes a tour of the caves with a 5-second stay in each one.

Central Cavern
The Cold Room
The Menagerie
Abandoned Uranium Workings
Eugene's Lair

Differences original Bug-Byte version (left) and Software Projects' re-issued version (right)

Processing Plant
The Vat
Miner Willy meets the Kong Beast
Wacky Amoebatrons
The Endorian Forest
Attack of the Mutant Telephones
Return of the Alien Kong Beast
Ore Refinery
Skylab Landing Bay
Bank
Sixteenth Cavern
The Warehouse
Amoebatrons' Revenge
Solar Power Generator
The Final Barrier

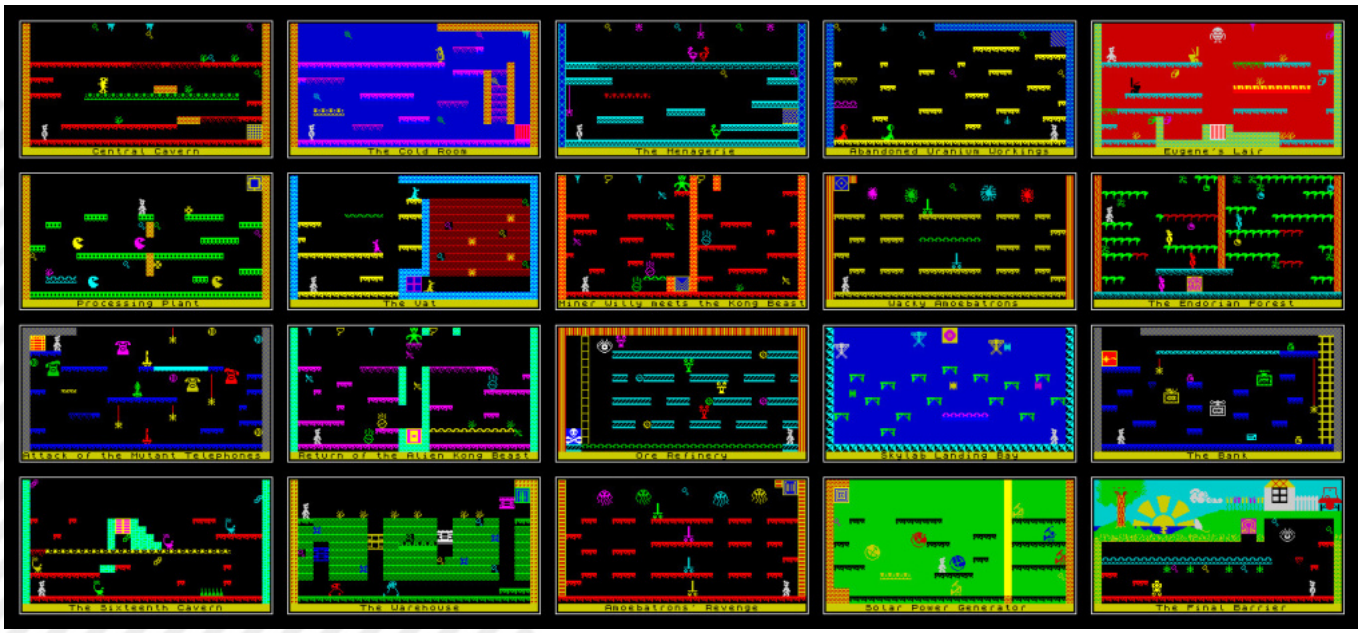
Particular game elements

Within Manic Miner were a number of gameplay elements that were quite unusual in those ancestral days.
The first screen had conveyor belts and collapsing platforms.
Level 14, Skylab Landing Bay, forces the player to dodge Skylab space stations falling from the top of the screen.
Level 19 features a series of moving mirrors that reflect beams of light that reduce the player's air.
Humor everywhere
The game is full of Smith's peculiar sense of humor.
The fifth level features a caricature of former Bug-Byte executive wearing glasses Eugene Evans.
This one whose cave is full of lethal baths, requested by Smith's three-year-old brother.
Levels eight and twelve feature an alien Kong Beast, a sort of green-skinned version of Donkey Kong.

Initially he had to be thrown into a tub, though they eventually removed that option because Matthew Smith didn't like violent computer games.
Other levels feature Pac-Men and Ewoks appearing directly from the hit film Return of the Jedi, released that year.
The overall impression was of a game that had never been in front of a censorship board.
Even that it wasn't reviewed by a lawyer.
In fact some later portings removed Kong!

Audio compartment

On the ZX Spectrum this was the first game released to have a soundtrack during the game action and not just in the presentation.
The music accompanying the game (not in all conversions) is an electronic version of the composition "In the King's Den of the Mountain" by Edvard Grieg,.
This is a stage composition created to set music to the play Peer Gynt,.
We are talking about a play composed by the Norwegian Henrik Ibsen;.
Instead, the title screen music is "On the Beautiful Blue



The 20 levels of the game

Danube" by Johann Strauss II.

A chat about the author

It's impossible to separate Manic Miner from its author, the eccentric lone genius Matthew Smith.

British game writers of the period ai divided into three basic groups.

There was the group of former mainframe programmers and electrical engineers, like Geoff Crammond and David Crane.

They had decided to try their hand at games.

These were serious men producing serious games that involved physics.

Then there was the "next generation" - the kids who grew up playing.

People like us, but unlike us who played with only the idea of being able to make games, they simply did.

Without giving up after writing a plot and drawing some sprites!

They were driven by a satanic lust for money, fame and glory.

Most of them ended up writing movie tie-ins for Ocean Software or cheap BMX games for Codemasters.

And then they, the eccentrics

And then there were crazy eccentrics with wild hair and weird obsessions.

Jeff Minter is the most famous of these.

He loved llamas and yaks and dressed like a hippie because

Matthew Smith

The love for the Monty Pithon

he was a hippie, and is to this day a hippie.

A new generation of electronic cyber-hippie.

"Too strange to live too rare to die."

Matthew Smith was all of those things.

She wore normal clothes, though she wore no stockings.

This was pointed out in at least a couple of contemporaneous interviews that came out in different magazines.

And he had huge black hair that hid his face.

It was a "one-man" software development team at a time when such a thing was still viable.

His games only reflected his personality, his love of Monty Python and underground comics.

The love for Monty Python among other things shines through not too veiled in the screen that appears at the end of the loss of all three of our lives.

A real force

Today these people are confined to the world of indie games or open source operating systems.

Instead, in 1983 the only possible way was for this band of loners to become a major force in the reality of the traditional games industry, to shape it around themselves.

Although the industry was much smaller than it is today, and I'm only talking about Britain, Smith started early, releasing his first game at the tender age of 16.

First steps

It was a forgettable title called Styx, somewhat reminiscent of the 1980s arcade game Wizard of Wor.

Although the gameplay was simplistic, it featured fluid sprite movements.

This was at a time when Spectrum games tended to flicker like crazy.

It had been submitted at the request of Bug-Byte Software of Liverpool.

In exchange for 3 games he promised the loan of a ZX Spectrum to Smith.

Although it was only a modest success, the company had

enough faith in Smith to release his next title.

Manic Miner

He wrote Manic Miner in an eight-week time frame on a TRS-80.

This is by waking up at night and planning straight through to lunchtime the next day.

After that he would collapse from sleep only to wake up and continue.

The game was directly inspired by the arcade hit Donkey Kong and Miner 2049er, an Atari 800 title written by Californian Bill Hogue.

Matthew Smith was a fan of Hogue's earlier TRS-80 games and had learned most of his programming style by taking apart his code.

Recommended by Bug Byte

At Bug-Byte's suggestion, Smith started a game with a jumping miner and some caves.

At some point his imagination took over and he added lethal toilets and Skylab space stations that crash, as well as Pac-Men with legs.

Manic Miner on the market

Manic Miner was released in September 1983 for the ZX Spectrum 48K, at a normal full price of £5.95.

It attracted glowing reviews and was a big hit, staying on the charts for months. All this while contemporary titles such as Jet Pac, Football Manager and Ant Attack climbed the charts.

The game made Bug-Byte a lot of money, although Smith's contract only called for selling a small percentage.

As a result of this dissatisfaction Smith left Bug-Byte to create a new software house with some veterans of the local software scene.

He had signed a freelance contract for Bug-Byte when he wrote Manic Miner.

There was a clause that allowed them to withdraw the game from circulation upon written request.

At that point the rights would be returned to him.

From Bug Byte to Software Projects

In hindsight it was a terrible mistake on the part of Bug-Byte, who were using creative accounting to hide the game's profits.

In early 1984, the rights to Manic Miner were transferred to Software Projects, Smith's new home.

The two editions had some graphic differences and were sold with different covers.

Bug-Byte went bankrupt a year later.

Awards fashion

The original version on Bug-Byte came with a competition that was something of a fad at the time.

The idea was simple.

The first group of people able to decipher the secret message of the last level would be invited to a play-off to win a first prize afterwards.

The October 1983 Computer & Video Games magazine reveals that a man named Jim Wills was the first to accomplish this incredible feat.

He won a color television.

Play off ghost

The playoff was apparently scheduled for Christmas that year, but no record of it can be found; Matthew Smith left Bug-Byte around that time, taking the game with him, so perhaps it was quietly cancelled.

Physical, real-world rewards for those who finished a computer game were popular in the early 1980s.

Domark's very first game, a multi-part text adventure called Eureka! (1984), had a prize of twenty-five thousand pounds up for grabs.

Not a trinket or a theme park trip or anything clever, "only" twenty five thousand pounds.

Cold, hard cash.

The difficulty of Manic Miner

Manic Miner is a notoriously difficult game. Although it belongs to the platformer genre, it bears some similarities to the evolved style of Mario and Sonic.

Its gameplay is much less forgiving and much more rigid.

It's reminiscent of an ultra-hard Mario ROM hack.

Sort of a prehistoric ancestor of Kaizo Mario World.

There is usually only one way to complete each cave.

Everything must be executed with a combination of pixel perfect jumping and timing in seconds.

Nowadays, with save states in emulators, it becomes frustrating but not impossible.

In 1983 there were no saves or pause functions.

The player had to finish it in one sitting.

Asylum Caves

The first few caves were fairly easy although the first room

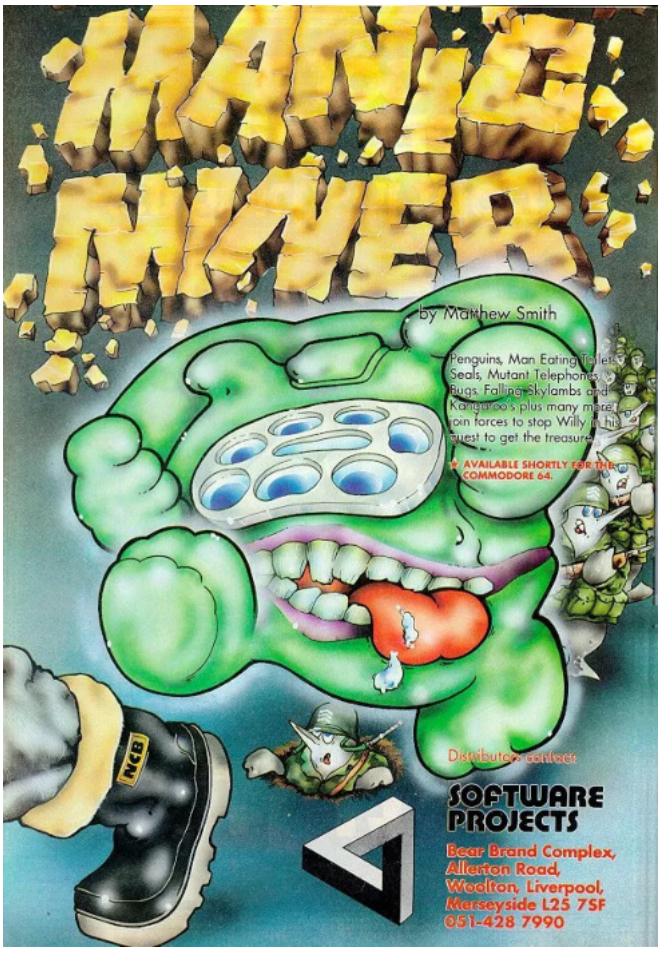
had a couple of difficult jumps.
Beyond about level five the difficulty increases in Ghosts and Goblins territory, at least until the player memorizes the pattern of each level.
This still requires a ton of play time.

Conversions

Manic Miner was converted on almost every contemporary 8-bit machine sold in the UK, including the odd one like Oric 1 and Dragon 32.
The porting to the Commodore C64 was very faithful, presented in a "windowbox" format, although the graphics looked oddly faded.
There was also a porting for Commodore C16 that still retained all the levels, albeit in simplified form, which was impressive given that the game was never released for the 16K version of the ZX Spectrum.

Manic Miner on 16 bit

Manic Miner was even converted to the 16-bit Amiga in 1990, though this version received mixed reviews.
The graphics have been enlarged and Miner Willy has a huge nose.
For some reason the designers chose to increase the size of the screen, so that the display would have to scroll to keep the player in view.



There was also a conversion for the early 90s abortion, Sam Coupe, an 8-bit machine released in 1989 during the heyday of 16-bit machines.
On this it was more faithful than the Amiga version, but the Coupe was a lost cause and so very few people could play it.
Outside of the mobile world, the most recent porting is a 2002 version released for the Game Boy Advance. It combined the scrolling of the Amiga version with the increased speed of the Coupe porting.
The game's simplicity has lent itself to unofficial conversions and fan-created sequels. The top ZX Spectrum fan site World of Spectrum lists dozens of them.
Among the most important were the portings for the Science of Cambridge Z88. It was an A4 sized laptop designed by Clive Sinclair, with an 8×80 pixel LCD display. As with the Amiga version, this had to scroll to fit the game to the screen. While it probably wasn't much fun, I imagine the feat was pretty impressive.
The game was also reworked for the Hewlett-Packard HP-48 and Sinclair ZX81 graphing calculator, a machine with 1K of base memory (expandable to 16K).
Although Manic Miner is still fondly remembered, it was overshadowed by its sequel, Jet Set Willy, which retained the same core gameplay but greatly expanded the play area. Still, it remains an impressive achievement from the UK's first computer gaming scene.

Old Man's Corner!!! It's here! Lets'rock!

Interview with Emanuele Gaglini, author of “Siculitan Miner”

by Giorgio Balestrieri

What Commodore 64 or ZX Spectrum owner has never played Manic Miner? Programmed by Matthew Smith and published in 1983 by Bug-Byte Software, it soon became one of the most popular and critically acclaimed 8bit microcomputer games, later converted for numerous other platforms, up to Xbox 360 and mobile phones.
Characterised by a very high level of difficulty, in the game we will have to take Willy, the protagonist, out of a mine consisting of 20 fixed-screen levels, collecting a series of objects that will allow passage to the next level, while avoiding the guardians who can kill us at a single touch. The game scheme is that of a platformer, of which Manic Miner soon became the genre's benchmark, and the player is required to memorise the pattern necessary to explore the level and collect the required items. Pixel-precise jumping is also required, on pain of falling from excessive heights, resulting in the loss of a life.
A game of diabolical difficulty, which was however also appreciated for this and which saw the birth of two sequels, Jet Set Willy and Jet Set Willy II.
Like many of us, Emanuele was so fascinated by Manic Miner that he created his own game (and more, as we will see) for C-64 and IBM XT PC. In this interview, he tells us how the idea was born and how it was implemented on these two platforms.
Let's listen to his words about all of this and more.

Siculitan Miner C64 - (intro)

Let's start with the usual introductions, age and what you do in your daily life.

Hi, I'm 53 years old and obviously work in the IT sector, a great passion from a very young age, going from programming to managing analysis and programming teams, but of course in my spare time I still dabble in writing a few lines of code, for a few years now, I have been cataloguing my audio collection of vinyls and live recordings (my favourite music), repairing audio imperfections or recreating missing parts, linking up with another of my great passions, which is music, both listened to and played (vocals, lead and rhythm guitar, composition, sequencing), and then moving on to my third, but not last, passion, which is drawing and painting... and here too, information technology plays a fundamental role between digitising drawings and colouring or computer graphics directly. In short, thinking about it now, during the interview, I realise that computer science, considered cold and linked only to mere calculations, binds together all my other passions that are theoretically associated with art and therefore in antithesis, being considered the maximum expression of our emotions, anything but cold... all these passions are in common with my brother by the way. The merit of our parents was that while our father got us interested in mathematics and computer science, our mother on the other hand made us appreciate literature, music and art and also nature (my mother as a hobby, which turned into a great passion and second job, had malacology and also discovered two new species of shells). I would say a unique family environment from which to draw heavily from these two seemingly different currents, but which when united provided a formidable mix that has always demonstrated how information technology manages not only to coexist, but also to enhance the various forms of artistic expression.

How did you approach the ZX Spectrum and the C64?

Our father was already in contact with the computer

Siculitan Miner C64 - level 01

Siculitan Miner C64 - level 08

industry through his work, so when I was about ten years old, my younger brother and I were already watching him tinkering on the first Z80s with that hypnotic green phosphor monitor, which he had assembled himself. A few years later he came up with the Commodore VIC-20 and there it was love at first sight, with evenings spent all together typing lists and obviously playing, we children, with the games in cartridges. With the Vic-20, our father taught us the basic concepts of programming in Basic, and from there we started off by programming the first card games or minefield, and then moved on to games with redefined graphic characters. Then a few years later, the Commodore 64 arrived and more than love at first sight, it was total love, compared to my brother shortly after the first programs or games in Basic, I immediately switched to learning and programming in Assembler, to take full advantage of the speed and capabilities offered by our dear biscuit. On the Sinclair side, our only contact with a ZX Spectrum was with a cousin of ours during the summer holidays, because we would take turns inviting each other home and trying out each other's home computers, there we discovered that each of the two systems had its merits and flaws.

Besides these two superstars of 1980s microinformatics to which this issue is dedicated, have you had experience with other systems, both computers and consoles? Which ones stimulated your interest and why?

That's a good question, actually right after the VIC-20 came out the Mattel Intellivision with a Football and Baseball game never seen at that time, but right after that came the C-64 with Andrew Spencer's "International Soccer" so we played the Intellivision just in some shops, while I used to play the Atari VCS-2600 in a shop near my home in the early afternoon after school, they let me play it because I was quite good at it and so I could get the customers interested, sometimes they even gave me some original Atari gadgets that I still keep (and that of course are always of interest to some Atari collector).

Thanks to your father, you therefore approached the world of computing and from there the art of programming. What languages have you been confronted with?

Yes, as I said before, thanks to my father in the early 1980s I became interested in computer science and programming. With remarkable insight, he prophesied that computer science would be the job of the future and so it was indeed. With the Vic-20 I started programming in Basic language and with the Commodore 64 I moved straight from Basic and Simon's Basic to learning and programming in Assembler, given the speed and the possibility of exploiting interrupts to do things that in Basic were objectively, if not difficult, certainly slow to achieve the same result. Then of course with the advent of PCs, I moved on to GW Basic and Quick Basic, the C

Siculitan Miner C64 - level 20

PCXT Siculitan Miner - intro

PCXT Siculitan Miner - level 1

language, then the MS Visual C and Visual Basic suites, JavaScript, Java and so on, and then moved on to co-ordinate and get others to do it, at work of course.

C64 and ZX Spectrum: what do you think are the main strengths and weaknesses, from a programmer's point of view.

About the ZX Spectrum I can say little, not having had it at the time and therefore not having programmed with it, let's say that at that age you were struck by the fact that it had no real sound system and the graphics were not multi-coloured like the C-64's, so it performed less well on certain types of action games or arcade conversion games. On the other hand, however, in isometric action-adventure games or platformers, where the single-colour font was used but with different coloured backgrounds, the Speccy really gave its best, in fact a very interesting representative game for me and my brother was 'Ant Attack', which was never officially converted on the C-64. On the C-64, I can say that the strong point was obviously the sound and the multi-coloured graphics with the Sprites. The impact for a child or teenager who preferred to play video games was devastating, unrivalled. This was obviously not for everyone. Also because, as we know well by now, the C-64 came out with an incomplete Basic interpreter, so the PEEKs and POKEs in the lists and programs were wasted, and remembering them all by heart was always a challenge. Obviously, these are my considerations as far as the gaming impact is concerned, let's remember that for Sir Clive Sinclair, his home computers were designed for teaching and financial use and not for playing games, so from that point of view, the ZX Spectrum was on par with Mr Jack Tramiel's C-64, as they both had good hardware such as drives, printers and plotters.

When did the encounter with the personal computer take place?

The encounter with personal computers took place in the late 1980s. While from a recreational point of view, teenagers (and not) had moved from the beloved C-64 to the new Commodore Amiga, one of the first IBM XT PCs entered our house and the leap towards the more 'serious' world of home computer use was just around the corner.

What languages have you experimented with on this platform?

We had the first Assembler manuals for the XT as well, but almost immediately, after the first programs in GW Basic, I happened upon QuickBasic 2.0, which from the Basic source, once compiled, produced a fairly fast DOS executable, so I took the quickest shortcut and the first programs and games on the PC were written in QB2. Then the evolution from structured programming (QB, Assembler, C) to Object-Oriented programming (C++, Java, etc.) of the most recent languages went hand in hand with the evolution of the PC, which now dominates the new millennium.

'Manic Miner' as the inspiration for 'Siculitan Miner', when did you first play it, on what platform?

The first time I played 'Manic Miner' was on the C-64. It was already clear from the game credits that it was a conversion of the original on Matthew Smith's ZX Spectrum, and I thought they were the same, but once I played it on my cousin's Speccy, I realised that there were differences, and not even small ones, all to the detriment of the C-64

PCXT Siculitan Miner - level 4 (Spiderbery's cave)

PCXT Siculitan Miner - level 5 (Sicilian puppets)

version where Chris Lancaster, perhaps due to marketing time constraints, had left out quite a few implementations.

What is the element of gameplay that particularly impressed you, making 'Manic Miner' one of your favourites?

I have always liked the platformer style of gameplay, but 'Manic Miner' had something extra that made it more special and challenging to play, because it favoured precision and timing of movements and less action for its own sake. In each level, nothing was left to chance and the layout of terrain, obstacles and the movement of the guardians had a very precise pattern, so the right timing and the right move were essential to carry out the path leading to the completion of each level, with even more solutions to be adopted.

Rewriting (and parodying) 'Manic Miner' with 'Siculitan Miner': when did the idea come about and why?

The idea of parodying 'Manic Miner' with my game 'Siculitan Miner' was born in high school. My mother's origins are Siculitan, and so are the parents of a classmate of mine, who was obviously also a fan of the C-64 and its platform games, not only Matthew Smith's masterpiece, but also "Miner 2049'er" (from which, together with "Donkey Kong", Smith himself was inspired for "Manic Miner") and "China Miner". So we joked that in the platformers there was an English miner hero, a Chinese one and the only Italian one was Mario from "Donkey Kong" (then ironically his clone on C-64 "The Great Gianna Sisters" came out). At the time, an adventure game called "Catania Gions" came out for the Apple II and I had the idea of making a platformer à la "Manic Miner" that, rather than parodying, paid homage to our Sicilian origins, taking the best from the various platformers mentioned above. The only parody was the title, deliberately an Anglo-Sicilian mispronunciation by inserting a non-existent English adjective 'Siculitan'.

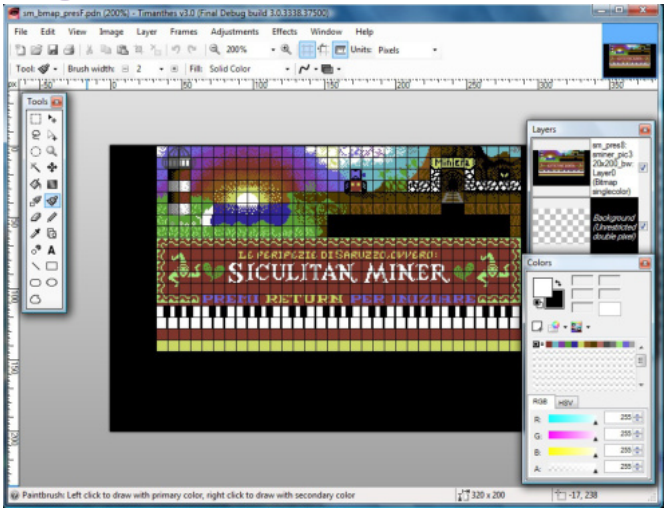
How did you approach the creative process? Did you decompile the game? Did you replay it to the point of exhaustion?

The creative process was to take "Manic Miner" as a reference model (and add some cues from "China Miner" as well), this without disassembling the code of the C-64 version, which was imperfect compared to the Speccy original. In addition, I did not like some of the behaviours and bugs in the original game, so I created my own game rules engine on paper, based on my experience and notes from playing both versions. On paper I also started to create sketches of the levels and then began creating test routines in Assembler on the C-64, to see if the engine could work, then between study commitments, tennis, table football and music, I put the project on hold.

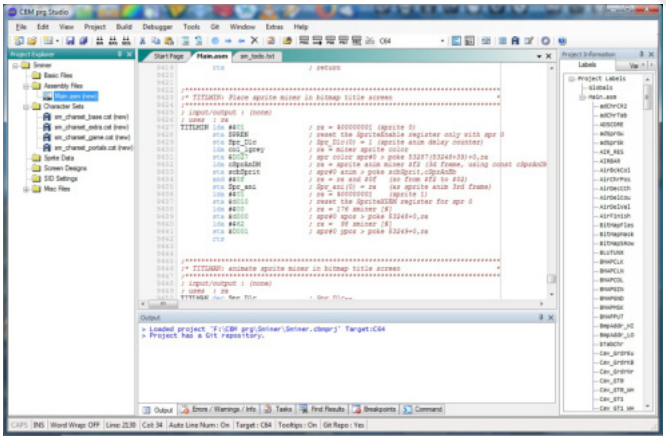
'Siculitan Miner' was also implemented on an XT with a CGA card. What were the critical points of the project? Did you use any graphics library available at the time or did you have to create everything from scratch?

As mentioned earlier, although the idea was born in high school and thus in the middle of the C-64 era, the "Siculitan

PCXT original notes of CGA version



Timanthes was used for the BitMap intro



CBM Prg Studio Editor was used to code the game

Miner" project was put on hold, but when a few years later the PC XT arrived and the CGA graphics card came along, I learned from magazines how to create graphics and Sprites and resumed the game project, not so much as an end in itself, but as a challenge to see if even the PC-XT with the CGA could emulate the graphics (obviously with the four-colour limitation) and Sprites like the C-64, including pixel collision between them. The game was therefore initially made in GW Basic, but soon afterwards I opted for QuickBasic 2.0 because, as I said before, it offered the double advantage of a Basic interpreter and the speed of execution thanks to the native compilation capability, which produced very fast DOS executables. Besides the game itself, I had to create my own routines for managing and creating sprites, their off-screen handling and pixel collision. In addition on the PC, more than a game, I made a platformer game engine a la 'Manic Miner' called SMiner, because some peculiarities of the game, such as the reflecting sunbeam, the Alien Kong Beast or the Skylabs can, by following certain rules, be present in every cave, and not carved into the code. In fact, for the game I also created my own CGA Sprite Editor and of course a SMiner Level Pack Editor. The DOS executable of "Siculitan Miner" on PC contained the data of all my levels of course, but it accepted from the command line the input of a data file of other levels generated by my level editor and of course I also made the exact clone of "Manic Miner" in CGA, but everything remained only within the walls of my house; only my brother played it to check the playability, bugs or difficulty of the levels and I never released it to the public. Years later I took the game out to show it to some friends, who still love platformers and vintage PC gaming, and of course, I think it was the early 2000s, with the advent of graphics cards faster than the first CGAs, when I launched the game, the execution time originally dictated by a delay value and/or the vertical sync interrupt were no longer enough to slow the game down. Intrigued, I fished out the source code and immediately reasoned about the one thing that would force any PC with a faster CPU than an XT, or with a faster graphics card, to respect the time I would impose on it: musically marked time, so once again my musical mindset came to the rescue. I then set the interrupt to execute the game code after playing a silent sound of a precise duration, as code born on a PC-XT always acts on the hardware beeper (basically the small speaker in the PC case that emits the typical beep sounds). This allowed it to be played on faster PCs and on non-DOS systems such as MS Windows, up to Windows XP which still had the correct native DOS execution, from Windows Vista onwards, or on Linux DosBox or VirtualBox would be needed, but this was not the case, to my surprise. My trick of fake 'musical' interrupts, led DosBox to poorly execute the program after a few minutes of running and playing, to the point of crashing it, while on the VirtualBox versions of many years ago, if I remember correctly, emulating a WinXP client, the game would run in the DOS window, but in practice it would 'stutter', I don't know what other term to use to explain the behaviour. At this point I realised that no matter how accurate an emulator may be, it will never be 100% accurate compared to the original hardware and software.

The porting of 'Siculitan Miner' to C64: when the project was born and why, since an official version of Manic

Miner already existed?

The idea of bringing the PC version of "Siculitan Miner" to the C-64 was not mine, but born during a dinner in July 2020 with some friends from the 8bit inside club, one of the rare post-lockdown releases of the pandemic that has plagued us for the past two and a half years. One of the topics was the games we liked in the 80s, and if we had programmed any of them, telling the story of how I created my platformer on the PC in CGA, I was asked by one of them why I hadn't ported it to the C-64. I replied that "Manic Miner" already existed on the C-64, albeit imperfectly, but I was told that "Siculitan Miner" did not exist on the C-64, and I was, shall we say, challenged as to whether I was still able to program it on our dear breadbin. I was hesitant at first, but hating to lose a challenge, and with the pandemic forcing us to spend more time at home, I coded the game on the C-64 between late 2020 and early 2021 in the spare time. Having transposed my version of "Siculitan Miner" from the PC to the C-64, I used the game engine to recreate my version of "Manic Miner (2021)" as well, thus more similar to the original Spectrum version (especially the "Solar Power Generator" level) and adjusting the music of the intro of "On the Beautiful Blue Danube" and especially of "In The Hall Of The Mountain King" during the game, which was unrecognisable in the C-64 version. As a lover of the original platformer devised by Smith, I answer your question in the affirmative, because in addition to porting my game, which is a personal gratification in having proved to myself that I can still write Assembler programs after thirty years, the C-64 needed a more faithful porting of "Manic Miner", which as I said before, I made using the game engine of "Siculitan Miner". I saw some other porting in 2010, improving on one side, but not faithful overall on the other, so on a personal level, I can say I put an end to making both games I wanted to play on the C-64 at that time.

Again, what were the challenges associated with this work?

The first challenge was to review the Assembler of the C-64, but that was the easy part, dusting off the manuals that I still jealously keep together with everything to do with the jewels of my Commodore collection, the hardest part was basically to go from theory to practice. The Net obviously came to my aid, looking for new tools to facilitate programming in Assembler and I found in CBM PRG Studio the ideal tool to do so, then I also had to use the presentation screen (and also for the final level) in Hi-Res BitMap and I stumbled upon Timanthes, I felt comfortable with it and didn't use or look for others. As for the game, I recreated the platformer engine by looking at the source code of the PC version and adapting it in Assembler on the C-64, obviously the handling of sprites and pixel collisions I omitted, since they are handled natively on the C-64, then I took a look at Chris Lancaster's machine code and I will explain later why. Having to use the graphic character set in an extended, non-multi-coloured way, to respect the classic canon of the Spectrum's miner-platform, I found myself with only 64 characters to redefine, and obviously more than half go between alphabet and numbers. In addition, in the PC version, extra characters were introduced in my levels as either deadly or harmless, in particular an homage to 'China Miner' (another not bad game by Ian Gray) where a character is harmless when walking on it, deadly if touched at the bottom, often a kind of terrain with a sharp stalactite underneath.

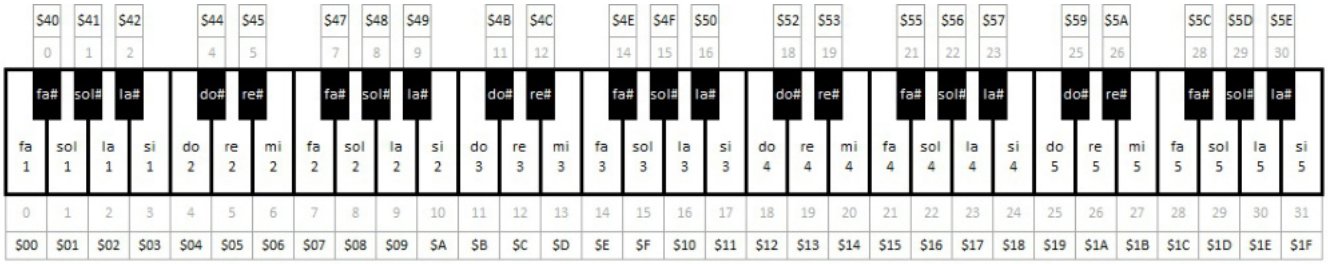
Siculitan Miner C64 - screenshot of 2 raster interrupt

Siculitan Miner C64 - screenshot of 3 raster interrupt

Manic Miner (1984) - Intro with wrong piano keys

Same intro screen with corrected piano keys

However, this further reduced the availability of redefinable characters in the game area and in the animations of the miner's lives in the panel at the bottom of the screen dedicated to the lives themselves and the scores (and also to the graphical icon that appears in front of the lives if cheat mode is used). So I got around the problem by managing the screen via raster interrupts by dividing the game area in extended character mode from the scores and lives animations panel area, which reverts to standard character mode, regaining the extra 192 characters and being free to use them. This problem in Lancaster's version of 'Manic Miner' was not there, because by looking at his code, the obstacle was circumvented by using alphabet characters or not used characters depending on the level name, whereas in my program, being a game engine, this trick could not be used. In addition, the final level (but in my game engine, any level can have it) in the upper part the Hi-Res bitmap landscape of the introduction screen is shown, and in this case the screen is divided into three areas managed by raster interrupts, thus adding the top area in Hi-Res. Here I used quite a bit of code to fix an effect that had bothered me a lot in the "Manic Miner" of the C-64 version: in the top area, being Hi-Res Bitmap, the drawn keys, the portal and the background colour of the level have a static colour and no colour changing effect to simulate the shimmering of the objects to be collected, the portal lighting up at the end of the level or if the background changes colour (flashing background) for possible winning of a life or, in demo mode, to switch from one level to another. In my case I have implemented routines which actually clone the BitMap area into a second area of memory, so as not to touch the original home screen, and since 8k are allocated to the BitMap area and they are many, at the start of the program I disable the area allocated to Basic and use it for my own purposes, then other routines analyse the graphics of the objects to be collected for that level and reproduce them in the BitMap, with further routines then taking care of changing the colour of the objects, the portal and the background area (defined with a bitmask) exactly as in the extended character area. Another challenge was the music management. Knowing that the routines of Rob Hubbard and other 8-bit music geniuses had been decompiled, I tried instead to create my own routines for managing notes and sounds, since in my original game on the PC XT at the time only the beeper existed and so I had never ventured into this field. The idea came about as a result of the opening screen of 'Manic Miner', where a piano keyboard appears at the bottom and basically plays musical notes by highlighting the keys pressed. Meanwhile, the first thing I corrected in my game is precisely the piano keyboard, which in the original game, I don't know how many people have ever noticed, is unrealistic, presenting consecutively a sequence of 'do-re-mi / do-re-mi' keys (C-D-E/C-D-E), while in my game it is correctly replaced by a classic 'do-re-mi-fa-sol-la-la-si' (C-D-E-F-G-A-B) sequence (as can be seen in the images, the part highlighted in blue). At this point, as I was saying, the idea I came up with for the musical note management routine is from the representation of the keyboard, where we have 32 white keys representing the note scale and black keys representing the sharps notes. So I thought that a single byte would be enough to represent it, using the values 0 to 31 to represent 32 notes (the white keys), while adding the bit with value 64 to them (but only for certain notes) I get the sharp (i.e. the black key). Looking at the schematic representation I have made, to play the first note on the keyboard, i.e.



Piano Map of Notes

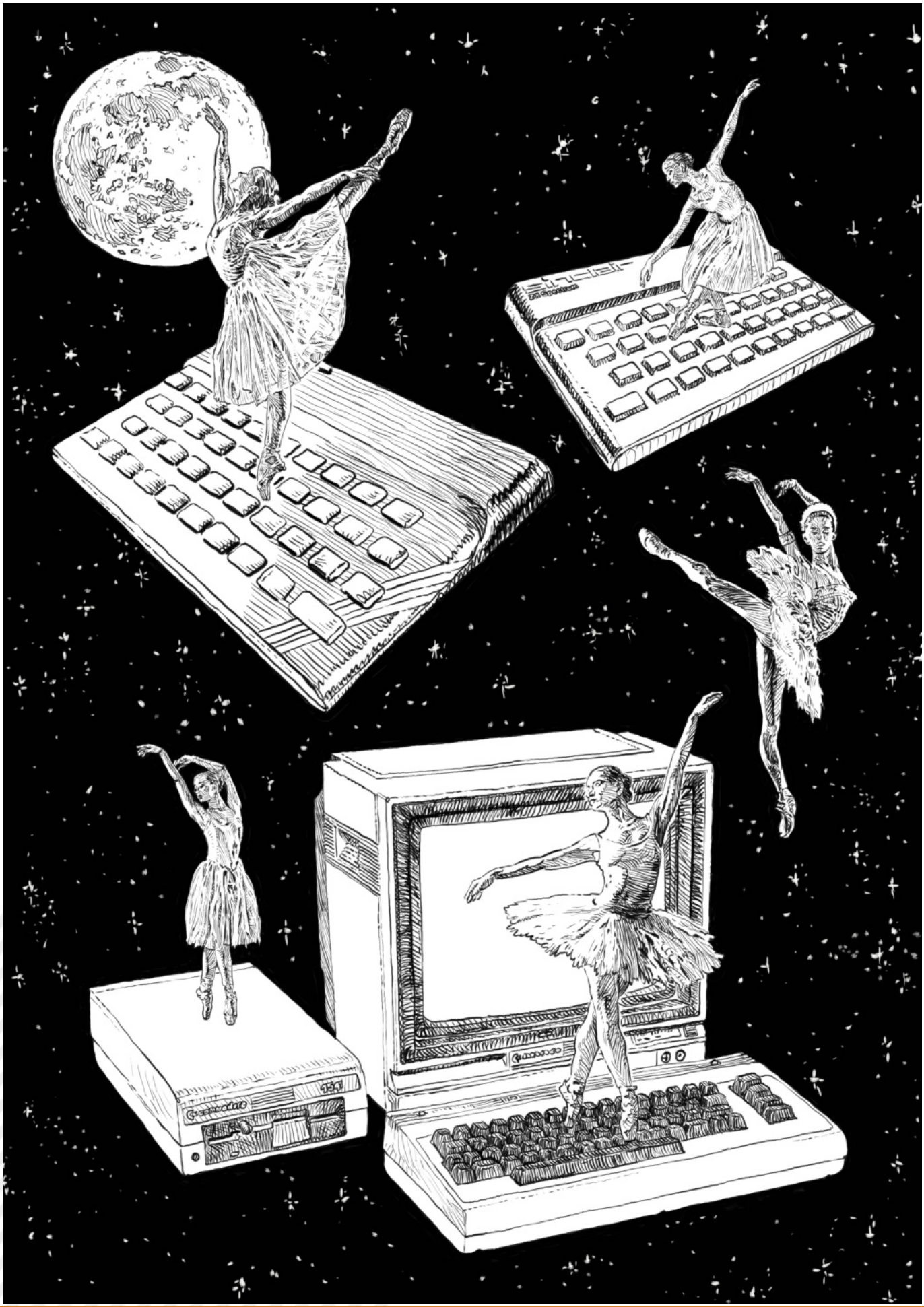
an F, I use the value $00, while if I have to play an F#, the hexadecimal value will be $00+$40 which equals 0+64 and therefore my routine searches in the data table for the first element (0 in this case) which will contain the frequency to play an F, or the 64th element to play an F#. At this point the management of how to represent and play the notes was done, I then had to create the data area which would act as the actual score to play the introductory music and the music during the game. Thus, as in sheet music, the data area consists of pairs of bytes, where the first is the note byte and the second takes care of the duration. A final mention of the piano keyboard in the game's intro, with a slight hint of satisfaction, is that in my game, in addition to the white keys, the black keys are also illuminated when the flat/diesis notes are played; as a musician, I found this handling intolerable in the original game (which, if I remember correctly, did not illuminate the black key, but the two contiguous white keys underneath it, and in reality it sounds quite different). Obviously, as an introductory song, I could only choose 'Vitti 'na Crozza' (which is also the title of one of the levels) and during the game 'Ciuri Ciuri', two pillars of traditional Sicilian music. Without going into further detail, in my game there is a particular handling of vertically falling Sprites equivalent to the Skylabs in 'Manic Miner', which in my level 'The Electrochemical Plant' are acid drops dripping not only from the top of the screen but also from the terrain in the middle of the play area, then the management of the sun ray, which in my case, if it touches the miner, can be harmless, take away air (as in the original Speccy 'Manic Miner', because in the C-64 the ray was really poorly implemented and harmless) or be animated and deadly to the touch. In addition, the ray changes direction when it hits a guardian like the original but, unlike the latter, is also deflected if it encounters a special character that acts as a deflector. These last two new implementations are present in my 'High Voltage' level. Another difference is in the handling of the miner's jump, especially when falling on moving rollers, which had some side flaws in Smith's original, making it too easy to play in some cases and in others even allowing the miner to pass through walls, while in the C-64 version the transposition of the movement frames and the jump was even more different and superficial. I tried not to dwell too long, but when you go into certain technical details to explain what you have achieved, it is difficult to do so, so I hope I did not bore you too much and that it served as a starting point for those who still want to try their hand at machine language programming on the Commodore 64.

We'd like to thank Emanuele for granting us this interview and for sharing with us, in such rich detail, both the genesis of 'Sicultian Miner' and little-known details of 'Manic Miner' that only a programmer and enthusiast like him could have grasped.

We would also like to thank the members of the 8bit Inside association (Ermanno Betori, Attilio Toffolo and Alberto Teodoro above all), for providing the drive to take up the project and complete it.

For those who would like to try out the game, a demo is currently available for download from the Retro Magazine World site at https://www.retromagazine.net/

For this issue we had two covers to choose from as Giuseppe did send two amazing images.
In the end our choice fell for the image you can admire as the cover, but the other was also worth seeing...
There you go! - Artwork by **Giuseppe Mangini**.



In 1995 the world was experiencing a new computer revolution, the child of that first wave of innovation that, as Jack Tramiel used to say, had brought computers to the masses (and not to the classes).

Unfortunately, however, many of the industries that had revolutionized the computer market, with Commodore and Sinclair in the lead, had failed to keep up with the times, often due to a short-sighted, arrogant and ignorant management.

Many of the boys of that time had been forced to put their beloved microcomputers in a closet; times had changed and to work seriously many new different applications and OSes were needed and the 8-bit could offer only a limited memory and processing power. Those who had switched to the Amiga, ST or QL had had one more chance, unfortunately wrecked by the aforementioned short-sightedness, arrogance and ignorance.

One day, during a coffee break at work, I witnessed a conversation between colleagues: one of them boasted that he had defragmented the hard disk, thus making the system faster; the other looked at him dreamily, as if such an operation was almost of an otherworldly nature. After a while the conversation shifted to legacy systems, at which the first guy commented: "the C64 is not worth the plastic around it!"

I was astonished. I did not own a C64 (my reference machines were the C128 and the Amiga 2000) but I had used the C64 mode of the C128 very often for both gaming and programming. The harshness of this statement hit me like a slap in the face.
"How is it so?" I thought; "You're bragging about something that others developed (defragmentation) and you're spouting off?". I would have liked to say to him, "If and when you're able to do a laserdisc-to-C64 port of a game like Dragons' Lair, we'll talk about it."
I decided instead to keep quiet, because I was sure, and still am, that against certain preconceptions it is useless to fight with words.

This is perhaps the ultimate sense of this special issue: to testify with facts that the world is different and that it is not with preconceptions that we move forward.

So we dedicate this issue of RetroMagazineWorld to ourselves. To all of us who, with our own small view, have seen the other world beyond the threshold; to us who have had the courage to cross it; to us who, despite all the disappointments and deceptions, have kept the flame burning.
This issue is dedicated to us, the editors and readers, who fight every day knowing that remembering and understanding the past will help build a better future.

Happy Birthday "Breadbin"! Happy Birthday "Speccy"! Many happy returns!

Gianluca Girelli

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